

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
14 September 2006 (14.09.2006)

PCT

(10) International Publication Number
WO 2006/096557 A3

- (51) International Patent Classification:
H04Q 7/20 (2006.01)
- (21) International Application Number:
PCT/US2006/007713
- (22) International Filing Date: 3 March 2006 (03.03.2006)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/658,923 4 March 2005 (04.03.2005) US
- (71) Applicant (for all designated States except US): SONIM TECHNOLOGIES, INC. [US/US]; 1875 S. Grant Street, San Mateo, California 94402 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): GUNDU, Veerabhadra [IN/US]; 674 Gail Avenue #G2, Sunnyvale, California 94086 (US).
- (74) Agent: IPSG, PC; PO Box 700640, Damon K.I. Kali, San Jose, California 95170 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

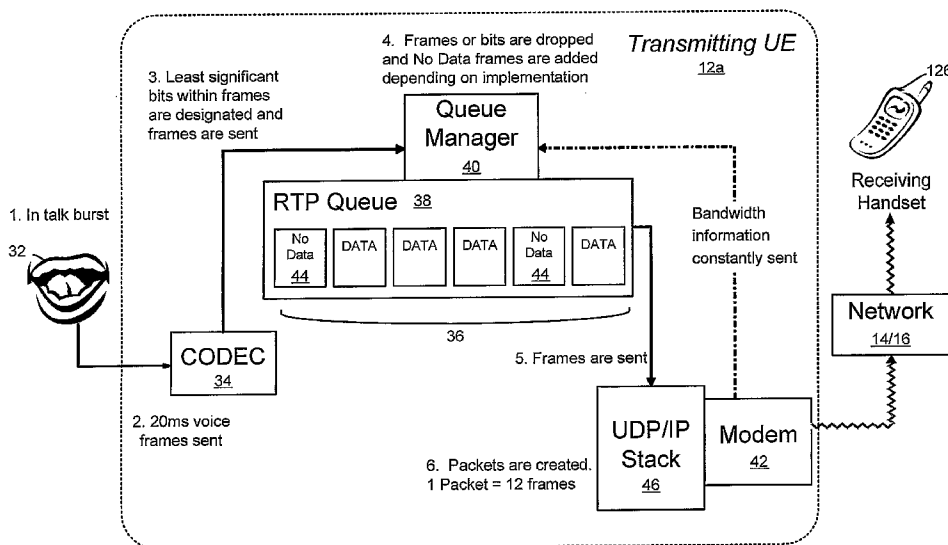
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
18 October 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: RESTRUCTURING DATA PACKETS TO IMPROVE VOICE QUALITY AT LOW BANDWIDTH CONDITIONS IN WIRELESS NETWORKS



(57) Abstract: Methods and client devices for transmitting data packets based on audio input from a client device to a communications network in a communication session by receiving audio input on the client device; encoding audio input into audio frames comprising audio data indicative of the audio input; measuring bandwidth utilization of the communications network; removing a portion of the audio data if the bandwidth utilization is above a first pre-determined threshold; grouping the audio frames into data packets; and transmitting the data packets over the communications network. Alternate embodiments for removing portions of the audio data include removing at least one audio frame from each of a selected set of the plurality of data packets. Additional embodiments for removing portions of the audio data include removing a set of least significant bytes from each of a selected set of audio frames.

WO 2006/096557 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 06/07713

A. CLASSIFICATION OF SUBJECT MATTER		
IPC(8) H04Q 7/20 (2007.01) USPC - 455/452.2 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) USPC - 455/452.2		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC - 455/403, 450, 421, 422.1, 452.2		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Google Scholar & Patent, Delphion Search Terms Used:(push to talk over cellular) or (push to talk)) and data and packet and audio and frame and bandwidth and predetermine and sip and rtp and qos and rtcp)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2004/0120474 A1 (LOPPONEN et al.) 24 June 2004 (24.06.2004), entire document, especially, Fig 1-2, 13-14, Para [0118] - [0240]	1-3, 9-12, 17 ----- 4-8, 13-16
X --- Y	US 2002/0184373 A1 (MAES et al.) 05 December 2002 (05.12.2002), entire document, especially Fig.2, Para. [0074] - [0317]	18, 19, 21 ----- 7,15, 20
Y	US 6,680,922 B1 (JORGENSEN) 20 January 2004 (20.01.2004), entire document, especially col 42, ln 45 - col 75, ln 19	4, 13
Y	US 2003/0012149 A1 (MAGGENTI et al.) 16 January 2003 (16.01.2003), entire document, especially Para [0015] - [0491]	5, 6, 8, 14, 16, 20
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* Special categories of cited documents:		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed	
Date of the actual completion of the international search 9 May 2007 (9.05.2007)	Date of mailing of the international search report 24 AUG 2007	
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774	