



- (51) **International Patent Classification:**
H04M 9/08 (2006.01) *H04B 3/23* (2006.01)
- (21) **International Application Number:**
PCT/IB2013/050365
- (22) **International Filing Date:**
15 January 2013 (15.01.2013)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/598,407 14 February 2012 (14.02.2012) US
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- (81) **Designated States** (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,

HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,
KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI,
NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU,
RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA,
ZM, ZW.

- (84) **Designated States** (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the
earlier application (Rule 4.17(iii))

Published:

- with international search report (Art. 21(3))

(88) Date of publication of the international search report:

7 November 2013

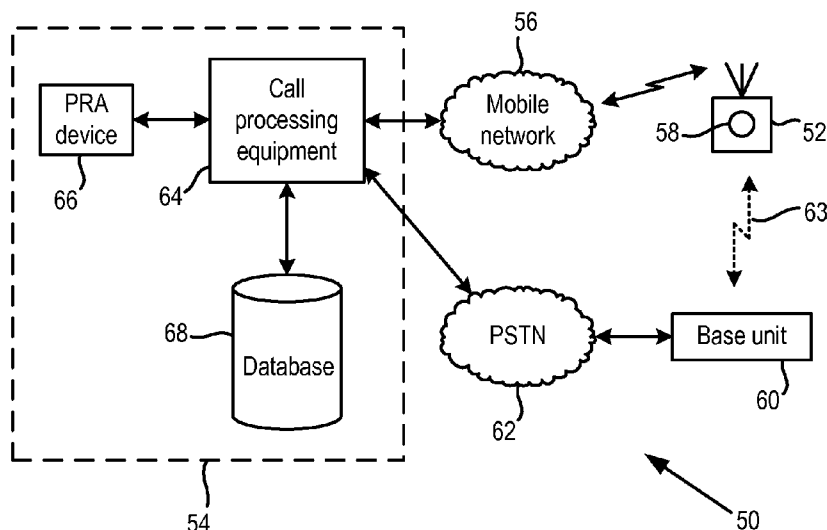
(54) **Title:** AUDIO SIGNAL PROCESSING IN A COMMUNICATION SYSTEM

Figure 3

(57) **Abstract:** Communications equipment for use by a call centre to enable communications between the call centre and one or more user devices is provided, with the communications equipment comprising audio processing circuitry for processing audio signals received from the user devices over a communications network, wherein the processing circuitry is configured to perform acoustic echo cancellation and/or noise suppression and/or dereverberation processing on the received audio signals to cancel acoustic echoes and/or suppress noise and/or suppress reverberation that is present in the audio signals received from the user device.

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2013/050365

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04M9/08 H04B3/23
ADD.

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)
H04B H04M G08B

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

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 6 724 736 B1 (AZRIEL GAD [IL]) 20 April 2004 (2004-04-20) column 6, line 34 - column 8, line 22 column 12, line 34 - line 51 column 15, line 18 - column 16, line 9; figures 1,4	1-5, 11-15 6-8
X A	----- EP 1 367 738 A1 (MITEL NETWORKS CORP [CA]) 3 December 2003 (2003-12-03) paragraphs [0006] - [0013], [0029] - [0030]; figures 4,6,8 -----	1-5, 11-15 6-8



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"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)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

19 April 2013

Date of mailing of the international search report

14/08/2013

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2013/050365

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6724736	B1	20-04-2004	NONE

EP 1367738	A1	03-12-2003	CA 2430030 A1 30-11-2003
			CN 1494231 A 05-05-2004
			DE 60307540 T2 09-08-2007
			EP 1367738 A1 03-12-2003
			GB 2389287 A 03-12-2003
			US 2003223574 A1 04-12-2003
			US 2007071230 A1 29-03-2007

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2013/050365

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-8, 11-15

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8, 11-15

Communication equipment according to claim 1 comprising a database for storing information on the call center or of user devices.

2. claims: 1, 9, 10

Communication equipment according to claim 1 further adapted to activate and deactivate one or more parts of audio processing circuitry of the user device based on an estimate of the power remaining in the user device.
