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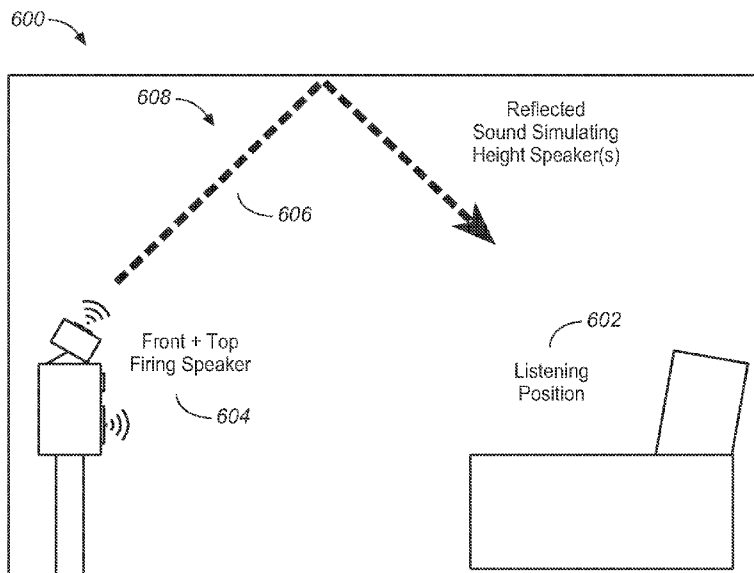
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**Declarations under Rule 4.17:**

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

[Continued on next page]

(54) Title: REFLECTED AND DIRECT RENDERING OF UPMIXED CONTENT TO INDIVIDUALLY ADDRESSABLE DRIVERS



**FIG. 6**

(57) Abstract: Embodiments are described for a system of rendering spatial audio content in a listening environment. The system includes a rendering component configured to generate a plurality of audio channels including information specifying a playback location in a listening area, an upmixer component receiving the plurality of audio channels and generating, for each audio channel, at least one reflected sub-channel configured to cause a majority of driver energy to reflect off of one or more surfaces of the listening area, and at least one direct sub-channel configured to cause a majority of driver energy to propagate directly to the playback location.





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— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))* — *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

**Published:**

— *with international search report (Art. 21(3))*

**(88) Date of publication of the international search report:**  
17 April 2014

INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2013/056665

A. CLASSIFICATION OF SUBJECT MATTER  
INV. H04S5/00 H04S7/00  
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)  
H04S H04R

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	US 2011/216925 A1 (RIGGS JASON [US] ET AL) 8 September 2011 (2011-09-08) the whole document	1-8
A	US 2010/135510 A1 (YOO JAE-HYOUN [KR] ET AL) 3 June 2010 (2010-06-03) figures 1-5	3-6,8
A	US 5 809 150 A (EBERBACH STEVEN J [US]) 15 September 1998 (1998-09-15) figures 3, 6a,6b, 7a,7b	5-8
A	US 2007/230724 A1 (KONAGAI YUSUKE [JP] ET AL) 4 October 2007 (2007-10-04) figures 1(C), 4(A)-4(C)	6,8
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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  12 February 2014	Date of mailing of the international search report  19/02/2014
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Fachado Romano, A
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## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/056665

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009/080666 A1 (UHLE CHRISTIAN [DE] ET AL) 26 March 2009 (2009-03-26)	9,12-17, 19-21,23
Y	paragraphs [0161], [0191]; figures 2, 4, 6, 9, 10, 15b	10,11, 18,22, 24,25
Y	----- WO 2009/056858 A2 (CAMBRIDGE MECHATRONICS LTD [GB]; EASTON MARK GEORGE [GB]; GREGORY THOM) 7 May 2009 (2009-05-07) figures 1,4,5	10,11, 24,25
Y	----- EP 1 667 488 A1 (YAMAHA CORP [JP]) 7 June 2006 (2006-06-07) abstract; figures 8-13 -----	18,22

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2013/056665
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011216925	A1	08-09-2011	NONE
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2013/056665

## 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.:

### 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

System for processing audio signals.

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2. claims: 9-25

Method and system for optimizing audio rendering

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