

EP 1 523 221 A3 (11)

H04R 3/04 (2006.01)

(12)

(19)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3: 20.10.2010 Bulletin 2010/42

H04S 7/00 (2006.01) H04R 3/14 (2006.01) (43) Date of publication A2:

13.04.2005 Bulletin 2005/15

(21) Application number: 04024188.7

(22) Date of filing: 11.10.2004

(84) Designated Contracting States:

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR

Designated Extension States:

AL HR LT LV MK

(30) Priority: 09.10.2003 US 509799 P

10.10.2003 US 684222 10.10.2003 US 684152 10.10.2003 US 684043 10.10.2003 US 684208

(71) Applicant: HARMAN INTERNATIONAL INDUSTRIES, INCORPORATED Northridge, CA 91329 (US)

(51) Int Cl.:

(72) Inventors:

· Devantier, Allan O. **Canyon County** CA 91351 (US)

· Welti, Todd S. **Thousand Oaks** CA 91360 (US)

(74) Representative: Grünecker, Kinkeldey,

Stockmair & Schwanhäusser

Anwaltssozietät Leopoldstrasse 4 80802 München (DE)

(54)System and method for audio system configuration

A system is provided for configuring an audio system for a given space. The system may statistically analyze potential configurations of the audio system to configure the audio system. The potential configurations may include positions of the loudspeakers, numbers of loudspeakers, types of loudspeakers, listening positions, correction factors, filters, or any combination thereof. The statistical analysis may indicate at least one metric of the potential configuration including indicating consistency of predicted transfer functions, flatness of the predicted transfer functions, differences in overall sound pressure level from seat to seat for the predicted transfer functions, efficiency of the predicted transfer functions, or the output of predicted transfer functions. The system also provides a methodology for selecting loudspeaker locations, the number of loudspeakers, the types of loudspeakers, correction factors, listening positions, crossover filters or a combination of these schemes in an audio system that has a single listening position or multiple listening positions.

FIG. 6 600 Select potential values for sound system parameters Input transfer functions for the potential speaker location(s) at the listening position(s). Modify the transfer functions based on the potential values of the parameters to generate predicted transfer functions. Statistically analyze the predicted transfer functions Select values for the parameters 610 based on the statistical analysis. Implement the values corresponding to the selected solution in the sound system. Apply global corrections equally for all speakers placed.

EP 1 523 221 A3



PARTIAL EUROPEAN SEARCH REPORT

Application Number

EP 04 02 4188

under Rule 62a and/or 63 of the European Patent Convention. This report shall be considered, for the purposes of subsequent proceedings, as the European search report

Category	Citation of document with indication of relevant passages	n, where appropriate,	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)	
х	EP 1 349 427 A2 (BOSE C 1 October 2003 (2003-10 * column 5, line 39 - c * column 8, line 37 - c * figures 1,3,4 *	-01)	1,2,16,	INV. H04S7/00 H04R3/04 H04R3/14	
A	JP 2000 261900 A (SONY 22 September 2000 (2000 * figures 1,3-5 *	 CORP) -09-22) 	1,2,16, 24-27		
				TECHNICAL FIELDS SEARCHED (IPC)	
The Searce not compl	MPLETE SEARCH The Division considers that the present applicate The property of the present applicate of the present applicate of the present applicate of the present applicate of the present application of t		/do		
Claima ao	arched incompletely :				
Reason fo	or the limitation of the search: sheet C				
	Place of search	Date of completion of the search	Mo:	Examiner	
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category		E : earlier patent doc after the filing dat D : document cited ii L : document cited fo	T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filling date D: document cited in the application L: document oited for other reasons		
O : non-written disclosure & : mem			ember of the same patent family, corresponding cument		



INCOMPLETE SEARCH SHEET C

Application Number

EP 04 02 4188

Art. 62a EPC; in the reply of the applicant, dated 22.07.2010, the applicant requested to have the Search Report drawn up on the basis of independent claims 1, 16 and 24.

Claim(s) completely searchable: 1, 2, 16, 24-27

Claim(s) searched incompletely: 1, 2, 16, 24-27

Claim(s) not searched: 3-15, 17-23, 28

Reason for the limitation of the search:

Art. 62a EPC; in the reply of the applicant, dated 22.07.2010, the applicant requested to have the Search Report drawn up on the basis of independent claims 1, 16 and 24.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 04 02 4188

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-09-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1349427	A2	01-10-2003	CN 1447624 A JP 2003324788 A US 2003179891 A1 US 2008069378 A1	08-10-2003 14-11-2003 25-09-2003 20-03-2008
JP 2000261900	A 	22-09-2000	NONE	

FORM P0459 For more details about this annex : see Official Journal of the European Patent Office, No. 12/82