

Title (en)

Method for elimination of feedback and for spectral expansion in hearing aids.

Title (de)

Verfahren zum Unterdrücken von Rückkopplungen und zur Spektralerweiterung bei Hörvorrichtungen

Title (fr)

Méthode pour la suppression de la rétroaction et pour l'expansion spectrale pour des appareils de correction auditive

Publication

EP 1853089 A3 20071226 (DE)

Application

EP 07106332 A 20070417

Priority

DE 102006020832 A 20060504

Abstract (en)

[origin: EP1853089A2] The method involves determining a feedback-endangered frequency range. An input signal is received with a spectral portion in the frequency range. The known spectral portion of the input signal is reduced. The reduced spectral portion is mixed with a synthetic signal, in such a manner that in the spectral region, the efficiency of the entire signal corresponds to the efficiency before the reduction. The synthetic signal is produced by frequency shift from the input signal. A spectral envelope of the mixed signal is corrected with the help of linear predictive coding analysis. Independent claims are also included for the following: (1) a hearing device with feedback suppression device (2) a method for providing the spectral expansion in a hearing device.

IPC 8 full level

H04R 25/00 (2006.01); **H04R 3/02** (2006.01)

CPC (source: EP US)

H04R 25/453 (2013.01 - EP US); **H04R 2430/03** (2013.01 - EP US)

Citation (search report)

- [XY] US 2004252853 A1 20041216 - BLAMEY PETER J [AU], et al
- [Y] DE 3733983 A1 19890420 - BOSCH GMBH ROBERT [DE]
- [X] EP 1304902 A1 20030423 - SIEMENS AG [DE]
- [Y] EP 0969692 A1 20000105 - ASAHI CHEMICAL IND [JP]
- [X] WO 9525415 A1 19950921 - HEARING INNOVATIONS INC [US]
- [X] KAMMEYER, DIRK: "Nachrichtenübertragung", 1996, B.G.TEUBNER, STUTTGART, XP002457123
- [X] KORNAGEL: "Techniques for artificial bandwidth extension of telephone speech", SIGNAL PROCESSING, ELSEVIER SCIENCE PUBLISHERS B.V. AMSTERDAM, NL, 27 October 2005 (2005-10-27), Internet, pages 1296 - 1306, XP002457122
- [X] EPPS J ET AL: "A new technique for wideband enhancement of coded narrowband speech", SPEECH CODING PROCEEDINGS, 1999 IEEE WORKSHOP ON PORVOO, FINLAND 20-23 JUNE 1999, PISCATAWAY, NJ, USA,IEEE, US, 20 June 1999 (1999-06-20), pages 174 - 176, XP010345554, ISBN: 0-7803-5651-9
- [X] KORNAGEL U: "SPECTRAL WIDENING OF TELEPHONE SPEECH USING AN EXTENDED CLASSIFICATION APPROACH", PROCEEDINGS OF THE EUROPEAN SIGNAL PROCESSING CONFERENCE, vol. 2, 2002, pages 339 - 342, XP008038635
- [A] KORNAGEL U: "SPECTRAL WIDENING OF THE EXCITATION SIGNAL FOR TELEPHONE-BAND SPEECH ENHANCEMENT", INTERNATIONAL WORKSHOP ON ACOUSTIC ECHO AND NOISE CONTROL, September 2001 (2001-09-01), pages 215 - 218, XP008038619
- [A] ENBOM N ET AL: "Bandwidth expansion of speech based on vector quantization of the mel frequency cepstral coefficients", SPEECH CODING PROCEEDINGS, 1999 IEEE WORKSHOP ON PORVOO, FINLAND 20-23 JUNE 1999, PISCATAWAY, NJ, USA,IEEE, US, 20 June 1999 (1999-06-20), pages 171 - 173, XP010345574, ISBN: 0-7803-5651-9

Cited by

EP2164283A3; EP2309777A1; CN102149038A; US8345902B2; US10524062B2

Designated contracting state (EPC)

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

Designated extension state (EPC)

AL BA HR MK YU

DOCDB simple family (publication)

EP 1853089 A2 20071107; EP 1853089 A3 20071226; EP 1853089 B1 20090729; EP 1853089 B2 20130925; AT E438267 T1 20090815; DE 102006020832 A1 20071115; DE 102006020832 B4 20161027; DE 502007001153 D1 20090910; DK 1853089 T3 20091116; DK 1853089 T4 20140106; US 2007269068 A1 20071122; US 8571243 B2 20131029

DOCDB simple family (application)

EP 07106332 A 20070417; AT 07106332 T 20070417; DE 102006020832 A 20060504; DE 502007001153 T 20070417; DK 07106332 T 20070417; US 79995507 A 20070503