Title (en)

Method and Apparatus for generating reference phase patterns

Title (de)

Verfahren und Vorrichtung zur Erzeugung von Referenzphasenmustern

Title (fr)

Procédé et appareil pour générer des motifs de phase de référence

Publication

EP 2439735 A1 20120411 (EN)

Application

EP 10306091 A 20101006

Priority

EP 10306091 A 20101006

Abstract (en)

For real-time audio watermarking, wherein the watermark embedding occurs in the frequency domain by modifying phases of spectra of the audio signal according to phase reference patterns, low-complexity watermark embedding is desired. Depending on a secret key SK, random reference phases for each watermark message symbol are generated, wherein the corresponding reference phase patterns are generated by approximating the inverse transform of the phase reference patterns and the corresponding transform and the windowing and windowing-overlapping effects, using two different short-length frequency-domain filters for even and odd blocks or subblocks. Thereby the computational complexity for generating the reference phase pattern blocks or subblocks is significantly reduced.

IPC 8 full level

G10L 19/00 (2006.01); **G10L 19/018** (2013.01); G10L 19/02 (2006.01); G10L 19/022 (2013.01)

CPC (source: EP)

G10L 19/018 (2013.01); G10L 19/022 (2013.01)

Citation (applicant)

- WO 2007031423 A1 20070322 - THOMSON LICENSING [FR], et al
- M.ARNOLD; P.G.BAUM; W.VOESSING: "A phase modulation audio watermarking technique", LLTH INFORMATION HIDING WORKSHOP, 2009, pages 102 - 116

Citation (search report)

- [YD] MICHAEL ARNOLD ET AL: "A Phase Modulation Audio Watermarking Technique", 8 June 2009, INFORMATION HIDING, SPRINGER BERLIN HEIDELBERG, BERLIN, HEIDELBERG, PAGE(S) 102 - 116, ISBN: 978-3-642-04430-4, XP019129276
- [Y] FERRIS T L J ET AL: "Frequency domain method for windowing in Fourier analysis", ELECTRONICS LETTERS, vol. 28, no. 15, 16 July 1992 (1992-07-16), pages 1440, XP002626131, ISSN: 0013-5194, DOI: 10.1049/el:19920916

Cited by

CN108417199A; US10277959B2; US10504200B2; US9368123B2; WO2014062332A1; US9769543B2; US10178443B2; US9639911B2; US9805434B2; US10354354B2; US10445848B2; US9681203B2; US9854332B2; US9854331B2; US9942602B2; US10110971B2; US10499120B2; US11722741B2

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 2439735 A1 20120411

DOCDB simple family (application)

EP 10306091 A 20101006