

**PATENT N°: US 8255207 B2**

Jurisdiction: US

<b>Names of the Evaluators</b>		
<b>Lead Evaluator</b>	<b>Assistant Evaluator #1</b>	<b>Assistant Evaluator #2</b>
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The above mentioned Evaluators hereby declare that the following claim(s):

- Claim 1
- Claim 61

in the above referenced patent, is(are) essential to making, using in, selling within, or importing into, the countries of registration, any 3GPP product (the applicable Product Categories are given below) that is or purports to be in compliance with the following parts of the Third Generation Partnership Program (3GPP) technical standards:

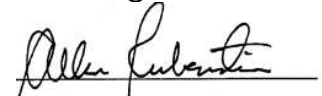
- Document 3GPP TS 26.447 V12.0.0 (2014-09): Sections 1, 4, 5.3.3.4.1, 5.3.3.4.1.1 and 5.3.3.4.1.2

Claim 1 is relevant for 3GPP Terminal Products and 3GPP Base Station Products.

Claim 61 is relevant for 3GPP Terminal Products and 3GPP Base Station Products.

**Authorized signature and date**

August 21, 2017



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(12) **United States Patent**  
**Vaillancourt et al.**

(10) **Patent No.:** **US 8,255,207 B2**  
(45) **Date of Patent:** **Aug. 28, 2012**

(54) **METHOD AND DEVICE FOR EFFICIENT  
FRAME ERASURE CONCEALMENT IN  
SPEECH CODECS**

FOREIGN PATENT DOCUMENTS

EP 0 747 883 7/2001

(Continued)

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OTHER PUBLICATIONS

“Coding of Speech at 8 kbit/s Using Conjugate-Structure Algebraic-Code-Excited Linear-Prediction (CS-ACELP),” ITU-T Recommendation G 729, Mar. 1996, 38 pages. “G. 729-based Embedded Variable Bit-Rate Coder: An 8-32 kbit/s Scalable Wideband Coder Bitstream Interoperable with G. 729,” ITU-T Recommendation G. 729.1, May 2006, 98 pages.

“Wideband Coding of Speech at Around 16 kbit/s Using Adaptive

(Continued)

(73) Assignee: **Voiceage Corporation**, Quebec (CA)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 941 days.

(21) Appl. No.: **12/095,224**

(22) PCT Filed: **Dec. 27, 2006**

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§ 371 (c)(1),  
(2), (4) Date: **Sep. 22, 2008**

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PCT Pub. Date: **Jul. 5, 2007**

(65) **Prior Publication Data**

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(51) **Int. Cl.**  
**G10L 15/00** (2006.01)

(52) **U.S. Cl.** .... **704/219; 704/223; 704/500; 375/240.27**

(58) **Field of Classification Search** ..... **704/219,  
704/223, 500; 375/240.27**

See application file for complete search history.

(56) **References Cited**

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(Continued)

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(57) **ABSTRACT**

A method and device for concealing frame erasures caused by frames of an encoded sound signal erased during transmission from an encoder to a decoder and for recovery of the decoder after frame erasures comprise, in the encoder, determining concealment/recovery parameters including at least phase information related to frames of the encoded sound signal. The concealment/recovery parameters determined in the encoder are transmitted to the decoder and, in the decoder, frame erasure concealment is conducted in response to the received concealment/recovery parameters. The frame erasure concealment comprises resynchronizing, in response to the received phase information, the erasure-concealed frames with corresponding frames of the sound signal encoded at the encoder. When no concealment/recovery parameters are transmitted to the decoder, a phase information of each frame of the encoded sound signal that has been erased during transmission from the encoder to the decoder is estimated in the decoder. Also, frame erasure concealment is conducted in the decoder in response to the estimated phase information, wherein the frame erasure concealment comprises resynchronizing, in response to the estimated phase information, each erasure-concealed frame with a corresponding frame of the sound signal encoded at the encoder.

**72 Claims, 13 Drawing Sheets**

