

**PATENT N°: US 9076443 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 8
- Claim 18

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:

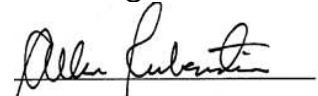
- Document 3GPP TS 26.445 V12.1.0 (2014-12): Sections 2, 4.4, 5.2, 5.2.3.1.7, 5.2.3.1.7.1 and 5.2.3.1.7.2; Figures 33, 34, 35, 36 and 37

Claim 8 is relevant for 3GPP Terminal Products and 3GPP Base Station Products.

Claim 18 is relevant for 3GPP Terminal Products and 3GPP Base Station Products.

**Authorized signature and date**

August 22, 2017



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(12) **United States Patent**  
**Malenovsky**

(10) **Patent No.:** **US 9,076,443 B2**  
(45) **Date of Patent:** **Jul. 7, 2015**

(54) **DEVICE AND METHOD FOR QUANTIZING THE GAINS OF THE ADAPTIVE AND FIXED CONTRIBUTIONS OF THE EXCITATION IN A CELP CODEC**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 550 days.

(21) Appl. No.: **13/396,371**

(22) Filed: **Feb. 14, 2012**

(65) **Prior Publication Data**

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**Related U.S. Application Data**

(60) Provisional application No. 61/442,960, filed on Feb. 15, 2011.

(51) **Int. Cl.**

**G10L 19/08** (2013.01)  
**G10L 19/083** (2013.01)  
**G10L 25/93** (2013.01)

(52) **U.S. Cl.**

CPC ..... **G10L 19/083** (2013.01)

(58) **Field of Classification Search**

CPC ..... G10L 2019/0001; G10L 2019/0002; G10L 2019/0003; G10L 2019/0004; G10L 19/18; G10L 19/20; G10L 19/22; G10L 19/08; G10L 19/083; G10L 25/93  
USPC ..... 704/219, 220, 221, 222, 223, 225, 230  
See application file for complete search history.

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(57) **ABSTRACT**

A device and method for quantizing a gain of a fixed contribution of an excitation in a frame, including sub-frames, of a coded sound signal. The gain is estimated in a sub-frame using a frame classification parameter, and is then quantized in the sub-frame using the estimated gain. The device and method can be used in jointly quantizing gains of adaptive and fixed contributions of an excitation. For retrieving a quantized gain of a fixed contribution of an excitation in a sub-frame, the gain of the fixed excitation contribution is estimated using a frame classification parameter, a gain codebook supplies a correction factor in response to a received, gain codebook index, and a multiplier multiplies the estimated gain by the correction factor to provide the quantized gain.

**28 Claims, 6 Drawing Sheets**

