

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 23 September 2016**

Case Number: T 1633/11 - 3.4.01

Application Number: 08152711.1

Publication Number: 1930881

IPC: G10L21/02

Language of the proceedings: EN

Title of invention:

Speech decoder employing noise compensation

Applicant:

Samsung Electronics Co., Ltd.

Headword:

Relevant legal provisions:

EPC Art. 76(1), 84

Keyword:

Divisional application - subject-matter extends beyond content
of earlier application (yes)
Claims - clarity (no)

Decisions cited:

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 1633/11 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 23 September 2016

Appellant: Samsung Electronics Co., Ltd.
(Applicant) 129, Samsung-ro
Yeongtong-gu
Suwon-si, Gyeonggi-do, 443-742 (KR)

Representative: Appleyard Lees IP LLP
15 Clare Road
Halifax HX1 2HY (GB)

Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 24 January 2011
refusing European patent application No.
08152711.1 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman G. Assi
Members: T. Zinke
J. Geschwind

Summary of Facts and Submissions

- I. The appeal, filed on 24 March 2011, lies from the decision of the examining division, posted on 24 January 2011, refusing European patent application No. 08 152 711.1, published with publication No. 1 930 881. This European patent application was filed as a divisional application of the earlier European patent application No. 99 946 655.0 (publication No. EP 1 110 209, WO-A-00/011650). The appeal fee was paid on the same date. The statement setting out the grounds of appeal was filed on 3 June 2011.

- II. In its decision the examining division refused the application since the then pending main request did not meet the requirements of Articles 83, 84 and 76(1) EPC and the then pending auxiliary request did not meet the requirements of Articles 84, 83, 123(2), 76(1) and Rule 42(1)(e) EPC.

- III. With the appeal the appellant (applicant) requested that the decision be set aside in its entirety. Auxiliary, oral proceedings were requested.

- IV. With the statement setting out the grounds of appeal the appellant requested that the contested decision be set aside and a patent be granted on the basis of sets of claims according to a main request, an auxiliary request I or an auxiliary request II, respectively, all sets of claims filed together with the statement setting out the grounds of appeal. Further, the appellant requested to be allowed a further opportunity to make amendments to the application documents.

The appellant provided counter-arguments with regard to the examining division's objections and submitted an affidavit and undertaking by Mr. Eyal Shlomot citing two documents E1 (P. Kroon and W. B. Kleijn, Chapter 3: *"Linear-Prediction based Analysis-by-Synthesis Coding"*, Section 7.3, pages 107-108, in *"Speech Coding and Synthesis"*, Ed. W. B. Kleijn and K. K. Paliwal, Elsevier, 1995) and E2 (A. Das, E. Paksoy and A. Gersho, *"Multimode and Variable-Rate Coding of Speech"*, pages 267-274, in *"Speech Coding and Synthesis"*, Ed. W. B. Kleijn and K. K. Paliwal, Elsevier, 1995) in order to show that the claimed invention was sufficiently described such that one of ordinary skill in the art would be able to implement the claimed invention relying on routine skill, as shown in the cited text books E1 and E2.

- V. By summons of 22 April 2016, the appellant was summonsed to oral proceedings due to take place on 23 September 2016. A communication under Article 15(1) RPBA was issued on 20 July 2016 drawing attention to the issues to be discussed during oral proceedings.
- VI. The appellant did not provide any comments to the Board's communication.
- VII. With a letter dated 15 September 2016, the appellant informed the Board that *"the Applicant will not be represented at the scheduled Oral Proceedings. We look forward to receiving the Board's decision in due course"*.
- VIII. The oral proceedings took place as scheduled in the absence of the appellant.

IX. Claim 1 of the main request reads as follows:

"1. A method of speech decoding a speech signal encoded by a CELP encoder that applies an analysis-by-synthesis approach to the speech signal, the method comprising: performing gradual noise classification (1111) of the speech signal to produce a weighting factor that represents a likelihood of the speech signal having a characteristic of noise; performing gradual noise compensation (1113; 1270; 1370) by applying the weighting factor to smooth a gain; and reproducing (1550) the speech signal (539) after applying the noise compensation."

Independent claim 3 is correspondingly formulated as claiming a speech decoder.

X. Claim 1 of auxiliary request I reads as follows:

"1. A method of speech decoding a speech signal encoded by a CELP encoder that applies an analysis-by-synthesis approach to the speech signal, the method comprising: performing gradual noise classification (1111) of the speech signal to produce a weighting factor that represents a likelihood of the speech signal having a characteristic of background noise; performing gradual noise compensation (1113; 1270; 1370) by applying the weighting factor to smooth a gain; and reproducing (1550) the speech signal (539) after applying the noise compensation."

(Emphasis added by the Board, showing the amendment as compared to claim 1 of the main request).

Independent claim 3 is correspondingly formulated as claiming a speech decoder.

XI. Claim 1 of auxiliary request II reads as follows:

"1. A method of speech decoding a speech signal encoded by an encoder that applies an analysis-by-synthesis approach to the speech signal, the method comprising: producing a weighting factor that represents a likelihood of the speech signal comprising background noise; applying noise compensation(1113; 1270; 1370) to the speech signal based on the weighting factor; and reproducing (1550) the speech signal (539) after applying the noise compensation."

Independent claim 7 is correspondingly formulated as claiming a speech decoder.

Reasons for the Decision

1. The appeal is admissible.
2. Main request
 - 2.1 Article 76(1) EPC
 - 2.1.1 The features as claimed in the claims of the main request have not been originally disclosed in this combination in the earlier application. In particular, as also pointed out by the appellant (cf. second row in the table on page 8 of the statement of grounds), on page 79, lines 3 to 12, reference to a "gradual" noise compensation and noise classification using "weighting factors" is made, but "smoothing of gain" is only

disclosed on page 79, last paragraph, which starts with *"In other embodiments..."*. Since *"other embodiments"* is stated explicitly, there is missing a direct and unambiguous disclosure that *"weighting factors"* and *"gradual"* noise compensation and classification can be used together with *"smoothing of gain"*.

- 2.1.2 Also the passage on pages 32 to 33 with regard to the smoothing of the LSFs with a parameter β is neither related to the smoothing of gains nor to gradual noise classification or gradual noise compensation. Hence, there is no original disclosure for claims 2 and 4, since no gain smoothing by a *"running mean"* is originally disclosed.
- 2.1.3 The formulation *"a likelihood of the speech signal having a characteristic of noise"* is not literally disclosed in the earlier application as originally filed. On page 79 it is only disclosed that a weighting factor *"represents a likelihood (with safety margin) that the present speech comprises background noise. The same or another weighting factor may indicate the likelihood of the speech portion comprising noise-like or pulse-like speech."* The used formulation in claim 1 seems to intend to cover both the background noise and the noise-like speech. The Board, however, doubts that the meaning of *"a likelihood of the speech signal having a characteristic of noise"* is restricted to the enclosed embodiments. For instance, *"having a characteristic of noise"* might mean that the speech signal comprises noise. However, it would also encompass that the speech signal only has one ("a") of several noise characteristics (e.g. spectrum, number of zero crossings, energy) but not the other noise characteristics, so that the speech signal might not be classified as noise or noise-like. Further, the

formulation as originally disclosed also mentions the likelihood of the speech portion comprising pulse-like speech. This is not reflected in the wording *"having a characteristic of noise"*.

2.1.4 Hence, the requirement of Article 76(1) EPC is not met.

2.2 Article 84 EPC

2.2.1 Even after due consideration of the arguments submitted with the statement of grounds and the affidavit of Mr Eyal Shlomot, the Board concludes that Article 84 EPC is not respected.

2.2.2 In particular, the feature *"performing gradual noise compensation by applying the weighting factor to smooth a gain"* is considered unclear. It is not specified which gain is meant, and how it is smoothed. The appellant argued (cf. grounds of appeal, page 16, paragraphs 2 to 7) that *"one skilled in the art recognizes that the gain to be smoothed in a CELP-based coder is one of an adaptive codebook gain or fixed codebook gain"*. But it is not stated whether only one of those gains is smoothed and not the other. Also, it is not specified which of the gains is smoothed.

In the affidavit, Mr Shlomot refers to document E1 when discussing gain smoothing with weighting factors. This document, however, is silent with regard to noise compensation and it does not use the term *"weighting factor"* but only refers to *" α "*.

2.2.3 Hence, the requirement of clarity (Article 84 EPC) is not met.

2.3 Therefore, the main request is not allowable.

3. Auxiliary request I

3.1 Article 76(1) EPC

3.1.1 Points 2.1.1 and 2.1.2 as discussed above with regard to the main request equally apply to the claim set according to auxiliary request I, since the same formulations are used.

3.1.2 Hence, the requirement of Article 76(1) EPC is not met.

3.2 Article 84 EPC

3.2.1 Point 2.2 as discussed above with regard to the main request equally applies to the claim set according to auxiliary request I, since the same formulations are used.

3.2.2 Hence, Hence, the requirement of clarity (Article 84 EPC) is not met.

3.3 Therefore, auxiliary request I is not allowable.

4. Auxiliary request II

4.1 Article 76(1) EPC

4.1.1 Claims 1 and 7 of auxiliary request II include the feature "*applying noise compensation to the speech signal based on the weighting factor*". The original description of the earlier application on page 79, lines 3 to 12 only describes noise compensation by noise insertion, when using the weighting factor. A general statement that the weighting factor is used for different possibilities of noise compensation, e.g.

smoothing of a gain, LSF smoothing, energy normalization (see page 79, last paragraph) is not disclosed. Hence, there is no original disclosure for the broad wording of claims 1 and 7. In this regard, also claims 6 and 12 claim gain smoothing for noise compensation based on weighting factors. As mentioned above with regard to the main request and auxiliary request I, there is no original disclosure for this combination.

4.1.2 Further, claims 2 and 8 recite that the speech signal is classified to produce the weighting factor. There is no disclosure for producing the weighting factor without noise classification. Hence, the broader wording of claims 1 and 7 is not originally disclosed.

4.1.3 Hence, the requirement of Article 76(1) EPC is not met.

4.2 Therefore, auxiliary request II is not allowable.

5. Right to be heard (Article 113(1) EPC)

The reasons for the present decision are all mentioned in the Board's communication of 20 July 2016. The appellant, however, failed to make any submissions in reply. The Board has no reason to take another view.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

The Registrar:

The Chairman:



R. Schumacher

G. Assi

Decision electronically authenticated