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**Datasheet for the decision
of 23 June 2017**

Case Number: T 1147/12 - 3.4.01

Application Number: 10180379.9

Publication Number: 2259255

IPC: G10L19/14

Language of the proceedings: EN

Title of invention:
Speech encoding method and system

Applicant:
Samsung Electronics Co., Ltd.

Headword:

Relevant legal provisions:

RPBA Art. 13(1), 15(3)
EPC Art. 84, 76(1)

Keyword:

Late-filed request - request clearly allowable (no) - admitted
(no)

Decisions cited:

T 1635/11

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 1147/12 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 23 June 2017

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 19 December
2011 refusing European patent application No.
10180379.9 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 examining division refused European patent application No. 10 180 379.

In its decision the examining division referred to a communication dated 12 October 2011 to which the applicant replied by requesting a decision according to the state of the file (cf. letter of 19 December 2011). In said communication the examining division maintained an objection under Art. 76(1) EPC (as compared to the earlier European patent application No. 09 152 359) raised in points 1-5 of the European Search Opinion of 3 November 2010.

- II. The appellant (applicant) filed an appeal against the decision.

With the statement setting out the grounds of appeal, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of an enclosed set of amended claims according to a main request.

- III. At the appellant's request, a summons to attend oral proceedings was issued.

- IV. In a communication pursuant to Art. 15(1) RPBA, the appellant was informed of objections under Art. 76(1) EPC against the main request.

- V. In reply, by letter of 22 May 2017, the appellant withdrew the previous main request, filed revised claim sets according to a new main request and a new first auxiliary request, respectively, and provided arguments with regard to the admissibility of the new requests

and the basis in the earlier application of the amendments made. The appellant also informed the Board that the representative would not attend the oral proceedings and requested a final decision based on the new main and first auxiliary requests and the submitted arguments.

VI. The oral proceedings took place as scheduled in the absence of the appellant.

VII. Claim 1 of the pending main request reads as follows:

"1. A multi-step encoding method for encoding an input speech signal using a multi-rate speech coding system configured to operate in one of a plurality of coding rates selected from 6.65kbps, 8.0 kbps and 11.0kbps and including a processing circuitry and a memory containing software utilized by the processing circuitry, the multi-step encoding method comprising: analyzing the input speech signal to generate linear prediction (LP) filter coefficients, adaptive codebook indices, adaptive codebook gains, fixed codebook indices and fixed codebook gains for a current frame of the input speech signal, the current frame having four subframes; and generating an encoded speech signal for the current frame using the LP filter coefficients, the adaptive codebook indices, the adaptive codebook gains, the fixed codebook indices and the fixed codebook gains, wherein the adaptive codebook indices are represented in the encoded speech signal using a first bit allocation which allocates 8 bits to encode a pitch delay for each of a first and third subframe of the four subframes and 5 bits to encode a relative delay of each of the second and fourth subframes of the four subframes for the current frame when the multi-rate

speech coding system is configured to operate in a first coding rate of 6.65kbps for the current frame; wherein the adaptive codebook indices are represented in the encoded speech signal using a second bit allocation which allocates 8 bits to encode the pitch delay for a first and third subframe of the four subframes and 5 bits to encode the relative delay of each of the second and fourth subframes of the four subframes for the current frame when the multi-rate speech coding system is configured to operate in a second coding rate of 8kbps for the current frame; and wherein the adaptive codebook indices are represented in the encoded speech signal using a third bit allocation which allocates 9 bits to encode the pitch delay for each of a first and third subframe of the four subframes and 6 bits to encode the relative delay of each of the second and fourth subframes of the four subframes for the current frame when the multi-rate speech coding system is configured to operate in a third coding rate of 11kbps for the current frame."

Claim 4 is a correspondingly formulated independent claim for a multi-rate speech coding system. Claims 2, 3, 5 and 6 are dependent claims.

VIII. In claim 1 of the pending first auxiliary request the following feature is added to the features of claim 1 of the pending main request:

"wherein in the third coding rate, a fractional pitch delay is used in the first and third subframes with resolutions $1/6$ in the range $[17, 93 \frac{4}{6}]$ and integers only in the range $[95, 145]$ and for the second and fourth subframes, a fractional pitch delay with resolution $1/6$ is used in the range $[T1-5 \frac{3}{6}, T1+4$

3/6], where T1 is the pitch lag of the previous subframe."

Claim 4 is a correspondingly formulated independent claim for a multi-rate speech coding system. Claims 2, 3, 5 and 6 are dependent claims.

Reasons for the Decision

1. The appeal is admissible.
2. Admissibility of the pending main request
 - 2.1 The amended claims according to the pending main request were filed in response to the Board's communication under Art. 15(1) RPBA.
 - 2.2 According to Art. 13(1) RPBA, *"Any amendment to a party's case after it has filed its grounds of appeal ... may be admitted and considered at the Board's discretion"*.

In accordance with established jurisprudence of the boards of appeal (cf. Case Law of the Boards of Appeal of the EPO, 8th edition, July 2016, section IV.E.4.4, *"Criteria for consideration of amended claims"*, pages 1151-1160), *"As a rule, the boards' decisions should be based on the issues in dispute at first instance, which does not rule out the admission of new submissions, but does subject it to the fulfillment of certain criteria, given that no entirely "fresh case" should be created on appeal Thus, in addition to the factors referred to in Art. 13(1) RPBA, the following criteria may ... likewise be decisive: there must be sound reasons for filing a request at a late stage in the proceedings, as may be the case where amendments are*

occasioned by developments during the proceedings or where the request addresses still outstanding objections. The amendments must be prima facie clearly allowable, ...", i.e. it must be immediately apparent to the board that the amendments made successfully address the issues raised, without giving rise to new ones.

2.3 In the present case, the appellant amended the claims with features taken from the originally filed description (cf. page 40 and appendix B) focusing on bit allocations for three particularly disclosed coding rates. Since an objection was raised in the communication under Art. 15(1) RPBA that the then claimed concept of using different bit allocations for different coding rates was too general as compared to the disclosure of the earlier application, the amendments made could be considered as a sound reason for filing amended claims according to the pending main request.

2.4 However, the amendments made give rise to new objections under Art. 84 EPC. For instance:

2.4.1 In independent claims 1 and 4 it is claimed that a *"relative delay"* of each of the second and fourth subframe is encoded. It is not specified, however, what is meant by *"relative"* in this regard. It would be plausible that *"relative"* refers to either the first or the third subframe, but it is not stated to which one.

2.4.2 Dependent claims 2 and 5 are amended by introducing the exact algorithm for determining a final pitch delay T_{op} as it is originally disclosed on pages 25 and 26 of the earlier application. However, as it was already stated by this Board in decision T1635/11 (cf. Reasons, 2.4),

the wording is unclear at least for the following reasons:

- The last feature describes actually four intervals " $[k_I/m-4, k_I/m+4]$ ", since " $m= 2,3,4,5$ ". It is unclear, whether k_i should be in each of them or not.
- The summation in the first equation for C_k is from " $n=0$ to 79 ". Moreover, in said equation " n_m defines the location of this signal on the first half frame or the last half frame". Since in the revised claim there is no restriction to the frame size, it is unclear, how n_m should be chosen, and why the summation is from $n=0$ to 79 .
- The term "*four open lag candidates*" would not make sense; probably, it should read "*four pitch lag candidates*".
- The wording of the claim does not clearly specify, whether the final pitch lag value T_{op} is equal to the finally determined (or corrected) k_I or k_i or might be a different value selected on the basis of the finally determined values k_I or k_i .

These features being directly derived from pages 25, 26, 40 and appendix B of the earlier application, it is not apparent, how they could be clarified.

2.4.3 Therefore, the requirements of Art. 84 EPC are not met.

2.5 Moreover, the amendments made do not overcome the objections raised under Art. 76(1) EPC in the communication under Art. 15(1) RPBA.

- 2.5.1 The original description of the earlier application describes on pages 9 to 73 and Figures 1 to 7 in a very detailed way a particular speech encoder and a corresponding decoder, each comprising a plurality of interconnected blocks for, inter alia, sampling the input speech signal in 20 ms frames with 160 samples each, filtering the sampled signal, determining linear prediction coefficients (LPC), determining line spectral frequencies (LSF), estimating a pitch lag, determining adaptive codebook indices, determining adaptive codebook gains, determining fixed codebook indices, determining fixed codebook gains, quantizing the LSF coefficients, the respective indices and respective gains, arranging the quantized bits etc. for five particular encoding rates. It is also disclosed in detail how the blocks should be adapted in order to take care of the different restrictions imposed by the different encoding rates.
- 2.5.2 Throughout the examination proceedings and during the appeal proceedings, the appellant tried to specify in the independent claims only one block (a multi-step encoding method and a corresponding multi-rate speech coding system that uses different bit allocations for different encoding rates) of the complete speech encoder by using a more generic wording than originally disclosed and not claiming in detail all the other blocks of the speech encoder. The appellant argued that a person skilled in the art would know that not only the complete speech encoder was disclosed but also the blocks on their own. Objections were raised by the examining division as well as the Board (cf. the communication under Art. 15(1) RPBA) against this generic wording.

2.5.3 With its pending main request, the appellant tried to overcome these objections by introducing the exact bit allocations for the index of the adaptive codebook for the encoding rates 6.65 kbps, 8.0 kbps and 11.0 kbps, as they were originally disclosed on pages 40, 41 and appendix B.

2.5.4 However, from pages 40, 41 and appendix B of the earlier application, it is evident that at least two essential features are missing:

- In the paragraph bridging pages 40 and 41 it is clearly stated that for the bit rate of 11.0 kbps a fractional pitch delay is used. There is no indication in this passage that the fractional pitch delay is optional. Since the particular bit allocation for 11.0 kbps described in this passage is chosen in order to take care of the fractional pitch delay, this feature is considered to be essential for the claimed bit allocation at 11.0 kbps.
- From appendix B it is apparent that for the bit rate of 6.65 kbps the currently claimed bit allocation is only used for an "*LTP mode*", whereas in a second mode ("*PP mode*") a different bit allocation is used. Neither the different modes, nor their determination, nor the different bit allocation for the "*PP mode*" are claimed. Since this "*PP mode*" and the corresponding bit allocation are not disclosed as optional, these essential features are missing. In this regard, it is important to note that the exact bit allocation for 6.65 kbps alone as a sub-part of the complete speech encoder can not be claimed without reference to another block, i.e. the block "*PP-LTP Mode*" (cf.

reference sign 245 in Fig. 3, described in the original description starting on page 26, last paragraph).

2.5.5 Hence, the subject-matter of independent claims 1 and 4 does not meet the requirements of Art. 76(1) EPC as compared to the disclosure of the earlier application.

2.6 Since the amendments made to the revised claim set give rise to new objections under Art. 84 EPC and do not successfully address the issues raised under Art. 76(1) EPC in the communication under Art. 15(1) RPBA, the pending main request is not prima facie clearly allowable.

2.7 Therefore, the Board did not admit the pending main request into the appeal proceedings in accordance with Art. 13(1) RPBA.

3. Admissibility of the pending first auxiliary request

3.1 Since the pending first auxiliary request was filed at the same time as the pending main request, the above-mentioned criteria for assessing admissibility apply as well.

3.2 The features referring to the "*relative delay*" in claims 1 and 4 as well as the exact algorithm to determine the final pitch delay T_{op} are identical to the features objected to with regard to the pending main request (cf. above), so that the same objections under Art. 84 EPC apply.

3.3 The fractional pitch delay for the bit rate of 11.0 kbps as originally disclosed in the paragraph bridging pages 40 and 41 is now included in the wording of the

independent claims of the pending first auxiliary request. However, this additional feature introduces a further objection under Art. 84 EPC, since the limits of the intervals claimed "[17, 93 4/6]" and "[95, 145]" do not make sense, when - as it is missing in the claim wording - no information about the frame size is given.

3.4 Moreover, since the feature with regard to the bit rate of 6.65 kbps is identical to the corresponding feature of the main request, the above objection with regard to the missing "PP mode" applies as well. Hence, the independent claims of the pending first auxiliary request add subject-matter as compared to the earlier application contrary to Art. 76(1) EPC.

3.5 Since the amendments made to the revised claim set give rise to new objections under Art. 84 EPC and do not successfully address the issues raised under Art. 76(1) EPC in the communication under Art. 15(1) RPBA, the pending first auxiliary request is not prima facie clearly allowable.

3.6 Therefore, the Board did not admit the pending first auxiliary request into the appeal proceedings in accordance with Art. 13(1) RPBA.

4. Appellant absent from oral proceedings

According to established case law (cf. Case Law of the Boards of Appeal of the EPO, 8th edition, July 2016, section IV.E.4.2.6 d), "Applicant (proprietor) absent from oral proceedings", pages 1137-1138), an appellant filing amended claims in response to a Board's communication under Art. 15(1) RPBA has to expect that the admissibility of the newly filed claims will be considered during the oral proceedings.

For this reason, in the present case, the appellant refraining from participating at the oral proceedings de facto renounced to submit its comments orally, if any. In accordance with the provisions of Art. 15(3) RPBA, the appellant was then treated as relying only on its written submissions.

Since the pending main request and first auxiliary request were not admitted into the proceedings and the previous request had been withdrawn, there are no further requests on file, so that the appeal has to be dismissed.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

The Registrar:

The Chairman:



R. Schumacher

G. Assi

Decision electronically authenticated