

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**
(PCT Rule 43*bis*.1)

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/SE2015/050503

International filing date (day/month/year)
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International Patent Classification (IPC) or both national classification and IPC
INV. G10L19/20 G10L19/22 G10L25/18 G10L25/51 G10L25/81

Applicant
TELEFONAKTIEBOLAGET L M ERICSSON (PUBL)

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0
Fax: +49 89 2399 - 4465


Date of completion of this opinion

see form PCT/ISA/210

Authorized Officer

Chétry, Nicolas

Telephone No. +49 89 2399-0



Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-16</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-16</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-16</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:

D1: US 2012/158401 A1 (MAZURENKO IVAN LEONIDOVICH [RU] ET AL),
21 June 2012.

D2: WO 2009/000073 A1 (VOICEAGE CORP [CA]; MALENOWSKY
VLADIMIR [CA]; JELINEK MILAN [CA]; VAIL), 31 December 2008.

2 In view of the clarity issues raised under Item VIII. 1 below, it is not considered practical to provide a thorough and detailed opinion about the novelty and inventive step for the independent claim 11 (claim 12) and for the independent claim 1 (claim 6), respectively.

3 Nonetheless, the search that has been conducted in the light of the matter disclosed in the dependent claims (see Item VIII. 2) and in the description when interpreting the features that are considered at present to be unclear did not reveal a "method for audio signal discrimination" (correspondingly an "audio discriminator") according to claim 11 (correspondingly claim 12) which would comprise the following features of claim 11 (claim 12):

"-determining a mean distance S between peaks in the set (see Item VIII. 1.1);

-determining a ratio, PNR, between a peak envelope and a noise floor envelope (see Item VIII. 1.2);

-determining to which class of audio signals, out of a plurality of audio signal classes, that the segment belongs, based on at least the mean distance S and the ratio PNR."

4 That is, if D1, which is regarded as the closest prior-art, discloses in order to "determine to which class of audio signals, out of a plurality of audio signal classes, that the segment belongs" (D1, Fig. 1(104), section [0030]), to use "a

set of spectral peaks" (D1, sections [0033], [0043]), D1 does not disclose "determining a mean distance S" and "determining a ratio, PNR", as in the present invention (see Item VIII. 1.1 and 1.2 as well as p. 9, lines 17 and 20 of the description). In this respect, the subject-matter of claim 11 (claim 12) appears to be novel (Art. 33(2) PCT).

- 5 These differentiating features result in the technical effect of providing two robust indicators in order to solve the objective technical problem of improving the classifier decision (see the description, p. 9, lines 14-20).
- 6 None of D1-D2 discloses or suggests to use the combination of features of the present invention ("S", p. 9, line 17 and "PNR", p. 9, line 20) to solve the objective technical problem at hand. More specifically, D1 proposes to use a "tonality" criterion (D1, section [0043], Fig. 6) but does not suggest using neither a mean distance "S" nor an additional "PNR" measure as defined in the present invention. As for D2, if it proposes a multi-features based audio classifier (D2, from p. 37, line 28 to p. 38, lines 10), none of these features appears to correspond to the "S" value or to the "PNR" value as defined in the present application, p. 9, lines 17 and 20, respectively. In this respect, the subject-matter of claim 11 (claim 12) appears to be inventive (Art. 33(3) PCT).
- 7 A similar observation is made with respect to independent claim 1 (claim 6) which shares the inventive concept of claim 11 (claim 12), with the additional note that the features "selecting a coding mode [...]" as a function of an audio signal class and "applying the selected coding mode" are nonetheless known from the prior-art (see D1, section [0005], lines 3-6, for example).
- 8 As a consequence of the above and considering the observations made under Item VIII. 2 below, claim 5 (claim 10) and claims 13-16 appear to meet also the requirements of Art. 33(2) PCT and of Art. 33(3) PCT, respectively.

Re Item VIII

Certain observations on the international application

- 1 **Independent claim 11 (claim 12) and independent claim 1 (claim 6) do not meet the requirements of Art. 6 PCT for the following reasons:**
- 1.1 These claims recite "determining a mean distance S between peaks in the set". However, there are multiple possibilities for determining a "mean distance" between "peaks", some of them being *de-facto* not disclosed in the description which mentions one and only one way for calculating said "mean

distance", namely in p. 9, lines 14-19. Hence not only this claimed matter is not clearly defined *per-se* but the wording that is used results in an undue broadening of the scope of protection with respect to the matter disclosed in the description to the point that it is considered it lacks support therefrom.

- 1.2 These claims recite "determining a ratio, PNR, between a peak envelope and a noise envelope". However a "ratio" is commonly interpreted as corresponding to a single value and the envelopes, the "peak envelope" and the "noise envelope", are commonly interpreted each as corresponding to an array of values (this is incidentally the matter that is disclosed in the description, p. 9, line 20). It is thus considered that the "PNR" is not clearly defined. It is also noted that a corresponding matter appears to be disclosed in the description, p. 9, line 20, p. 8, line 11 and p. 7, line 24.
- 1.3 In addition, in the same claimed expression, the features "a peak envelope" and "a noise envelope" are used. If these two features and more precisely the "envelopes" are not technically unclear *per-se*, they lead to different interpretations in the context set out by the other features of the claims that render unclear the matter for which protection is sought. That is, it is unclear how these envelopes are obtained and for instance if they are calculated in the time domain, in the frequency domain or/and if they are based on the previously identified "set of spectral peaks" or not. For these additional reasons, it is considered the concerned features are unclear and that the requirements of Art. 6 PCT are not met. A corresponding matter can be found in the passage of the description, p. 7, line 15 to p. 8, line 11.
- 2 Even if dependent claims 2-4 (claims 7-9) appear to provide additional details relating to the above unclear features "determining a mean distance S between peaks in the set" (=claims 2, 7) and "determining a ratio, PNR, between a peak envelope and a noise envelope" (= claims 3-4, 8-9), the mere combination of their features with the features of claim 1 (claim 6) is not considered to render the concerned matters to fully meet the requirements of Art. 6 PCT.