

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

To:

see form PCT/ISA/220

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

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/EP2009/050759

International filing date (day/month/year)  
23.01.2009

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC  
INV. H04R25/00 H04R29/00

Applicant  
WIDEX AS

**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 43bis.1(a)(i) with regard to novelty, inventive step or 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 66.1bis(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.

**3. For further details, see notes to Form PCT/ISA/220.**

<p>Name and mailing address of the ISA:</p> <div style="text-align: center;">  <p><b>European Patent Office</b> D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465</p> </div>	<p>Date of completion of this opinion</p> <p>see form PCT/ISA/210</p>	<p>Authorized Officer</p> <p><b>Heiner, Christoph</b> Telephone No. +49 89 2399-7628</p> <div style="text-align: right;">  </div>
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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
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**Box No. 1 Basis of the opinion**

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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 and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - a sequence listing
    - table(s) related to the sequence listing
  - b. format of material:
    - on paper
    - in electronic form
  - c. time of filing/furnishing:
    - contained in the international application as filed.
    - filed together with the international application in electronic form.
    - furnished subsequently to this Authority for the purposes of search.
4.  In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

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**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**

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1. Statement

Novelty (N)	Yes: Claims	<u>1-13</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-13</u>
Industrial applicability (IA)	Yes: Claims	<u>1-13</u>
	No: Claims	

2. Citations and explanations

see separate sheet

**Re item V:**

Reference is made to the following documents:

- D1 WO 2008/017326 A1 (WIDEX AS [DK]; NORDAHN MORTEN AGERBAK [DK]) 14 February 2008 (2008-02-14) cited in the application
- D2 US 2003/053646 A1 (NIELSEN JAKOB [CA] ET AL) 20 March 2003 (2003-03-20)

1

The application does not meet the requirements of Article 6 PCT, because there are unclarities in the claims.

Concerning claims 1,9,13

The wording "second band split digitized electrical signals" appears to be more clear when changed into "second frequency band".

It is not clear how the occlusion effect (OE) is actually calculated. The characterizing portion (saying not more than splitting first and second signal and transmitting the samples) appears to be not sufficient and the essential feature is missing that after equalization and ratio calculation the OE is determined, cf. p.8, l.2 and l.28 of the description.

Concerning claim 4

The meaning of "coupling" is not clear and lacks antecedents.

2

The subject-matter of claims 1/13 is not inventive in the sense of Article 33(3) PCT, and therefore the criteria of Article 33(1) PCT are not met.

The document D1 (cited by the applicants) is regarded as being the closest prior art to the subject-matter of claim 1, and discloses in the wording of claim 1 (references in parentheses refer to D1):

A system for measuring the occlusion effect comprising a hearing aid adapted for operation in a sound amplification mode and for operation in an occlusion measurement mode (p.3; 4. paragraph), said hearing aid comprising

- a microphone adapted for transforming an acoustic sound level external to a hearing aid users ear canal into a first electrical signal, said first electrical signal being guided to an A/D converter forming a first digitized electrical signal (p.3, 4. paragraph; p.10, 2.paragraph: A/D-converter),

- a receiver adapted for generating acoustic sounds in the ear canal of a user when in said amplification mode, and adapted for, when in said occlusion measurement mode, transforming the acoustic sound level in the ear canal into a second electrical signal, and (p.13, 2.paragraph),

- means for directing the second electrical signal obtained by the receiver in occlusion measurement mode ~~to an A/D converter forming a second digitized electrical signal~~ (p.13, 2.paragraph, last sentence),

said system comprising a signal processing means comprising a filter bank with means for splitting an electrical signal into different frequency bands (p.10, last paragraph),

characterized in that said system is adapted for when measuring the occlusion effect, said hearing aid is in occlusion measurement mode and said signal processing means are adapted for splitting the first and the second digitized electrical signals into a first and a second band split digitized electrical signals, respectively, applying said filter bank, and wherein said hearing aid comprises means for transmitting simultaneous samples of the first and the second band split digitized electrical signals to calculating means for calculating the occlusion effect (p.10, last paragraph - p.11, 2.paragraph).

The cancelled feature is not directly derivable from the teachings of D1. However, using an A/D converter for forming the second digitized electrical signal is considered to be obvious and necessary as this technique is also applied to the first microphone's output in D1, cf. p.10, beginning of 3.paragraph.

Therefore, the subject-matter of claims 1/13 is not inventive and thus not allowable.

3

The dependent claims do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, because they have already been employed for the same or similar purpose in a same or similar realisation or they are obvious, for example:

The subject-matter of claims 2-4 and 6 is obvious resp. disclosed in D1, p.10, 3. and 4.paragraph and p.13, 2.paragraph.

The subject-matter of claim 5 is not inventive for the following reason: For calculation of the OE the ratio of the signals recorded externally and internally of the ear are required by using microphones having the same transfer function. As the loudspeaker (used as microphone) and the microphone have different transfer functions, equalization is important to make it possible to compare their signals, cf. descr. p.7, l. 29-p.8, l.4; l.11-15; l.27-32. Therefore, the technical problem has to be solved of how to make the transfer functions of the two transducers, which record the external and internal sound, as identical as possible, i.e. the provision of two microphones having the same amplitude and phase response.

From D2 (§3,6,22) the skilled person knows that for matching microphones in the field of hearing aids filtering of their output signals takes place which ensures equal magnitude and phase response in a specified frequency range (equalisation). Even if this fact is mentioned in combination with a solution of another problem (in D2 satisfactory directionality enhancement is tried to be achieved), the generalization of this teaching is not adversely affected, i.e. whenever two transducers having different transfer functions shall behave equally, equalization of their signals is an obvious option.

As a consequence, the skilled person would apply this technique (equalization) to the subject-matter of D1 in order to solve the technical problem of providing two microphones giving the same response for the same sound pressure (cf. the identified problem in the present application on p.6, l.9-13), thus arriving at the claimed subject-matter.

The subject-matter of claim 7 is disclosed in principle in D1, p.18, l.4-5.

The subject-matter of claim 8 is disclosed in D1, p.14, last 3 lines - p.15, l.2.

The subject-matter of claim 9 is not considered to be inventive as a method is claimed which carries out the measurement according to the system of claims 1-8, which subject-matter is not considered to be patentable (see objections above), by method steps which correspond directly to the features of these claims.

The subject-matter of claims 10 and 11 can be found in D1, p.11, l.16-18.

The subject-matter of claim 12 has in principle already been discussed with claim 5.

Therefore, the subject-matter of the dependent claims is not inventive (A. 33(3) PCT).

The industrial applicability is given in the field of hearing aids.