

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 120545WO	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. PCT/US2013/044338	International filing date ( <i>day/month/year</i> ) 05 June 2013 (05.06.2013)	Priority date ( <i>day/month/year</i> ) 06 June 2012 (06.06.2012)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant QUALCOMM INCORPORATED			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input checked="" type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																						

<p align="center">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 338 82 70</p>	<p>Date of issuance of this report 09 December 2014 (09.12.2014)</p>
	<p>Authorized officer</p> <p align="center"><b>Athina Nickitas-Etienne</b></p> <p>e-mail: pt04.pct@wipo.int</p>

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.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	<b>FOR FURTHER ACTION</b> See paragraph 2 below
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International application No. PCT/US2013/044338	International filing date (day/month/year) 05.06.2013	Priority date (day/month/year) 06.06.2012
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International Patent Classification (IPC) or both national classification and IPC  
INV. G10L15/20 ADD. G10L17/00 G10L21/028 G10L21/0216 G10L21/0208

Applicant  
QUALCOMM INCORPORATED

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 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 66.1bis(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.

<p>Name and mailing address of the ISA:</p> <div style="text-align: center;">  </div> <p>European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016</p>	<p>Date of completion of this opinion</p> <p>see form PCT/ISA/210</p>	<p>Authorized Officer</p> <p>Hofe, Robin</p> <p>Telephone No. +31 70 340-8097</p>	
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**Box No. I 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, this opinion has been established on the basis of a sequence listing filed or furnished:
  - a. (means)
    - on paper
    - in electronic form
  - b. (time)
    - in the international application as filed
    - together with the international application in electronic form
    - 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 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:

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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>14-16</u>
	No: Claims	<u>1-13, 17-20</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-20</u>
Industrial applicability (IA)	Yes: Claims	<u>1-20</u>
	No: Claims	

2. Citations and explanations

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**Re Item V**

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

Reference is made to the following documents:

- D1 LLEIDA E ET AL: "Robust continuous speech recognition system based on a microphone array",  
ACOUSTICS, SPEECH AND SIGNAL PROCESSING, 1998.  
PROCEEDINGS OF THE 1998 IEEE INTERNATIONAL CONFERENCE  
ON SEATTLE, WA, USA 12-15 MAY 1998, NEW YORK, NY, USA, IEEE,  
US,  
vol. 1, 12 May 1998 (1998-05-12), pages 241-244, XP010279154,  
DOI: 10.1109/ICASSP.1998.674412  
ISBN: 978-0-7803-4428-0
- D2 WO 03/107327 A1 (KONINKL PHILIPS ELECTRONICS NV [NL];  
VIGNOLI FABIO [NL]) 24 December 2003 (2003-12-24)
- D3 EP 2 028 061 A2 (DELPHI TECH INC [US]) 25 February 2009  
(2009-02-25)
- D4 US 2006/212291 A1 (MATSUO NAOSHI [JP]) 21 September 2006  
(2006-09-21)

1 Novelty (Article 33(2) PCT)

1.1 The present application does not meet the criteria of Article 33(2) PCT,  
because the subject-matter of claims 1 and 18-20 is not new.

1.2 D1 discloses:

A method for improving speech recognition by a speech  
recognition system (**abstract**), comprising:  
obtaining a voice sample from a speaker (p. 241, right col.,  
lines 30-32);

storing the voice sample of the speaker as a voice model  
in a voice model database (*ibid.*; fig. 1);

identifying an area from which sound matching the voice  
model for the speaker is coming (p. 241, right col., lines 5-8; fig. 1);

and

providing one or more audio signals corresponding to sound received from the identified area to the speech recognition system for processing (fig. 1 and 2).

Claim 1 is therefore not new over the disclosure of D1 (Article 33(2) PCT).

1.3 Furthermore, the subject-matter of claim 1 is individually disclosed by documents D2, D3 and D4.

In D2, see (p. 3, lines 20-22), (p. 6, lines 26-27), (p. 6, lines 21-22), (p. 3, lines 23-31; p. 6, lines 28-31; p.7, lines 3-8), and (p. 7, lines 11-13), respectively.

In D3, see (par. 32), (p.10, right col., lines 25-28), (ibid.; col. 4, lines 1-4; par. 25; fig. 3: 56), (col. 3, lines 55-58; par. 30; fig. 5: 206, 208), (col. 4, lines 4-6; fig. 5: 216, 218), respectively.

In D4, see (par. 7), (par. 53), (ibid.), (ibid.), (ibid.), respectively.

1.4 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 18-20, which therefore are also considered not new.

2 Dependent Claims, negative assessment

2.1 Dependent claims 2-17 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.

2.2 The additional features of claims 2 and 3 are disclosed in D1, see (p. 241, right col., lines 11-14: "*beamformer*") and (ibid.; p. 243, sec. 3.2, par. 5: "*cancel the array output in the direction of the interferences*"). These features are also implied in D2 and D3 through the use of beam forming (cf. cited parts).

2.3 The additional features of claims 4 and 5 are disclosed through the use of beam forming in D1, D2 and D3 (cf. cited parts). It should be noted in this context that beam forming is described in paragraphs 82 and 93 of the description as a way to implement these features.

- 2.4 The additional features of claims 6-13 are disclosed in D1, see (p. 241, ch. 2, par. 1), (p. 241, ch. 2, par. 1: "*canceling the interferences*"; p. 243, left col., last par.), (ibid.), (p. 241, right col. lines 4-5; fig. 1 and 3), (p. 241, ch. 2, par. 1), (ibid.), (p. 243, ch. 4, lines 6-8 of first par.), (ibid.; p. 241, ch. 2, par. 1) respectively.
- 2.5 In claim 14, the technical feature of performing a spectral analysis is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem of characterising a sound signal.
- 2.6 Claims 15 and 16 relate to the case when specific microphones are associated with specific areas. For a person skilled in the art, it is an obvious alternative to use individual direction sensitive or spot microphones instead of beam forming arrays, see e.g. D3 (par. 17) and D4 (par. 67) in the same technical context.
- 2.7 The additional features of claim 17 are individually disclosed by D1 (p. 241, right col., lines 27-30), D2 (p. 1, lines 9-10) and D3 (col. 9, lines 14-20).
- 2.8 Claims 2-13 and 17 are therefore not new (Article 33(2) PCT) and claims 14-16 are not inventive (Article 33(3) PCT).

### **3 Re Item VII**

#### **Certain defects in the international application**

- 3.1 Independent claims 1 and 17-20 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art being placed in the preamble (Rule 6.3(b)(i) PCT) and the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- 3.2 The features of claims 1-20 are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 3.3 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1 is not mentioned in the description, nor are these documents identified therein.