

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  see form PCT/ISA/220
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# PCT

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/US2016/034060

International filing date (day/month/year)  
25.05.2016

Priority date (day/month/year)  
29.06.2015

International Patent Classification (IPC) or both national classification and IPC  
INV. H04L12/26 G06F21/50 H04L29/06

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.

Name and mailing address of the ISA:



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Date of completion of  
this opinion

see form  
PCT/ISA/210

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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:
  - 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:

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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>2-10, 12-15, 17-25, 27-30</u>
	No: Claims	<u>1, 11, 16, 26</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-30</u>
Industrial applicability (IA)	Yes: Claims	<u>1-30</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

**Point 5**

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

1. The following documents are referred to in this communication. Their numbering will be adhered to in the rest of the procedure:

**D1:** WO 2004/012063

**D2:** US 2013/0247187

2. Regarding **claim 1**, document **D1** (see the passages cited in the Search Report) discloses, according to **all** features of claim 1, a method of identifying anomalous application behavior by a processor of a computing device (see "application is malware" in the abstract; figure 1), comprising:

detecting network communication activity of an application on a computing device (see "outgoing communications" in paragraph[0028], lines 3-5; "communications" in paragraph[0031], lines 1-5);  
identifying one or more device states of the computing device (see "actions attributes" in paragraph[0031], lines 10-14);  
identifying one or more categories of the application (see "application belongs to a category" and "application is a location-based service" in paragraph[0030]); and  
determining whether the application is behaving anomalously based on a correlation of the detected network communication activity of the application, the identified one or more device states of the computing device, and the identified one or more categories of the application (see "behavior vector", "classifier to classify" and "application as benign or malware" in the abstract; figures 1 and 6).

3. Furthermore, the same considerations as made above also apply to **independent claims 11, 16 and 26** since these claims include essentially the same features combination as claim 1 (see also "touch-screen", "log the behavior", "generate behavior vector" and "classify the behavior vector" in paragraphs[0018-0019]).

4. The subject-matter of **claims 1, 11, 16 and 26** therefore is **not** new (see Article 33 (1) and (2) PCT).

5. It should furthermore be noted that **even if** the Applicant intended to argue novelty of **claims 1, 11, 16 and 26** based on minor differences between the features of said claims and those disclosed in document D1, the subject-matter of said claims would **not** involve an inventive step, Articles 33(1) and (3) PCT, having regard to the disclosure of document D1 and the normal knowledge of a person skilled in the art of applications behavior analysis, see e.g. document **D2**.

6. The **dependent claims 2 to 10, 12 to 15, 17 to 25 and 27 to 30** do not contain any additional feature which, in combination with the features of the claims to which they respectively refer, meet the requirement of the PCT with respect to **novelty** or **inventive step** (see Article 33 (1), (2) and (3) PCT) for the reason that the subject-matter of said claims is either in principle derivable from the disclosure of document **D1**, document **D2** or represents simple design details which are generally known to the person skilled in the art of application behavior analysis.

Due to the above reasons, **dependent claims 2 to 10, 12 to 15, 17 to 25 and 27 to 30** do **not** meet the requirement of Article 33 (1) PCT.

7. It is not at present apparent which part of the application could serve as a basis for a new set of claims meeting the requirements of Article 33 (1) PCT. Should the Applicant nevertheless regard some particular matter as **new** and **inventive**, an independent claim including such particular matter should be filed taking account of **Rule 6.3 PCT**. The Applicant should also indicate in the letter of reply the differences vis à vis the state of the art and **significance** thereof ( i.e. particular **advantages**).

### **Point 7**

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

8. Reference signs in parentheses should be inserted in the claims to increase their intelligibility, Rule 6.2 (b) PCT. This applies both the preamble and characterising portion (see PCT-Guidelines for Preliminary Examination, PG-III, 4.11) and to method claims in as far as they refer to apparatus features.

9. In order to meet the requirements of Rule 5.1 (a) (ii) PCT, the most relevant prior art, i.e. the documents D1 and D2 should be acknowledged by reference and briefly discussed in the introductory part of the description, preferably in such a way that the inventive merit of what is claimed can be readily understood.

10. Special care should be taken to avoid giving rise to further objections by the inadvertent addition of subject-matter (see Article 34.2 (b) PCT), e.g. by deleting of essential features which keep the invention novel and inventive over a combination of D1 and D2.

11. The Applicant should also ensure that the claims relate to a single invention (see Rule 13 PCT) especially in case multiple independent claims are still maintained (non-unity a posteriori).

12. In order to facilitate the examination of the conformity of the amended application with the requirements of Article 34(2)(b) PCT, the Applicant is requested to clearly identify the amendments carried out, no matter whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based (see also Rule 66.8(a) PCT).

13. The Applicant is requested to file amendments by way of replacement pages in the manner stipulated by Rule 66.8(a) PCT.

14. Any information the Applicant may wish to submit concerning the subject-matter of the invention, for example further details of its advantages or of the problem it solves, and for which there is no basis in the application as filed, should be confined to the letter of reply and not be incorporated into the application (see Article 34(2)(b) PCT).

15. The general statement "...**spirit**..." in paragraph[0107] of the description is not clear and when used to interpret the claims renders them also unclear, contrary to the requirements of Article 6 PCT. The statement, therefore, should be deleted.

16. Moreover, the Applicant's attention is drawn to the fact that, as a consequence of Rule 66.8(a) PCT the examiner is not permitted to carry out any amendments under the PCT procedure, however minor these may be.