

**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 DF162061PCT	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. PCT/CN2016/113236	International filing date ( <i>day/month/year</i> ) 29 December 2016 (29.12.2016)	Priority date ( <i>day/month/year</i> )
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant SHENZHEN TINNO WIRELESS TECHNOLOGY CO., LTD		

<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 5 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 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 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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	Date of issuance of this report 02 July 2019 (02.07.2019)
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From the INTERNATIONAL SEARCHING AUTHORITY

To:

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) <b>27 September 2017</b>	
Applicant's or agent's file reference <b>DF162061PCT</b>	<b>FOR FURTHER ACTION</b> See paragraph 2 below
International application No. <b>PCT/CN2016/113236</b>	International filing date (day/month/year) <b>29 December 2016</b>
International Patent Classification (IPC) or both national classification and IPC <b>H04W 52/36(2009.01)i</b>	
Applicant <b>SHENZHEN TINNO WIRELESS TECHNOLOGY CO., LTD</b>	

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 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/	Date of completion of this opinion	Authorized officer

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2016/113236

## 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 43*bis*.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:

**WRITTEN OPINION OF THE  
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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement</b>			
1. Statement	Novelty (N)	Claims	1-10 <hr/> None	YES <hr/> NO
	Inventive step (IS)	Claims	2-5, 7-10 <hr/> 1, 6,	YES <hr/> NO
	Industrial applicability (IA)	Claims	1-10 <hr/> None	YES <hr/> NO
2. Citations and explanations :				
<p>[1] D1: CN 101803432 A (11 August 2010), which is the prior art closest to claims 1-10.</p> <p>[2] D1 discloses a method and system for managing interference occurred during wireless communication using fractional reuse and other techniques, the fractional reuse involving spreading code, and discloses (see description, paragraphs [0165] - [0182], and figure 1, 2, 13 and 14): as shown in figure 1, the system comprises a network node 114, an access point 106 and an access terminal 112 (equivalent to a first system, the first system comprising a first receiving end and a first sending end), and an access point 104 and an access terminal 110 (equivalent to a second system, the second system comprising a second receiving end and a second sending end); as shown in block 1402, the access point 104 determines a set of spreading codes used for the downlink; if the set of spreading codes is not designated by the network node 114 or selected randomly, the access point 104 may select the set of spreading codes associated with the lowest interference (it is necessary to obtain candidate spreading codes and select spreading codes from the candidate spreading codes); in some cases, the access point 104 may cooperate with one or more other access points to determine which set of spreading codes to use, for example, the access point 104 and the access point 106 may negotiate to use different (mutually exclusive) set of spreading codes (the access point 104 and the access point 106 negotiate the spreading codes, which is equivalent to acquiring a spreading code used by the first system, and obtaining a target spreading code according to the candidate spreading codes and the spread code used by the first system, with the target spreading code being associated with the lowest interference); as shown in block 1408, the access point 104 sends a message to the access terminal 110 to notify the access terminal 110 of which spreading codes are used for the downlink (equivalent to instructing the second receiving end to access a channel corresponding to the target spreading code); and as shown in block 1412, the access terminal 110 uses spreading code information sent by the access point 104 to decode information received thereby via the downlink (the access point 104 is equivalent to the second sending end, and the method is executed on the second sending end).</p> <p>[3] 1. The differences between claims 1 and 6 and D1 lie in that (1) the spreading code used by the first system is used to identify a channel occupied by the first system; and (2) the target spreading code is used to identify, among channels not occupied by the first system, a channel with the lowest interference on the signal of the first system. The difference between claim 6 and D1 further includes: (3) function modularization.</p> <p>[4] Distinguishing features (1) and (3) mentioned above are customary means in the art. With regard to distinguishing feature (2) mentioned above, D1 discloses that the access point 104 negotiates with the access point 106 to select a spreading code associated with the lowest interference, and according to interference reciprocity, it would have been readily conceivable to a person skilled in the art that the target spreading code is used to identify, among channels not occupied by the first system, a channel with the lowest interference on the signal of the first system. Therefore, on the basis of D1 combined with customary means, it would have been obvious for a person skilled in the art to arrive at the technical solution of claim 1,6. These claims comply with PCT Article 33(2) and do not comply with PCT Article 33(3).</p> <p>[5] 2. The additional technical features of claims 2-5 and 7-10 are neither disclosed in D1, nor common general knowledge in the art, and the prior art also does not provide any motivation to arrive at the</p>				

WRITTEN OPINION OF THE  
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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**

technical solutions of said claims on the basis of D1 combined with corresponding technical features, that is, said claims comply with PCT Article 33(2) and (3).

[6] 3. Claims 1-10 are industrially applicable, and comply with PCT Article 33(4).