

**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 PJ8230WD	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. PCT/CN2017/079079	International filing date ( <i>day/month/year</i> ) 31 March 2017 (31.03.2017)	Priority date ( <i>day/month/year</i> ) 31 March 2016 (31.03.2016)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant HUAWEI TECHNOLOGIES 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 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 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 October 2018 (02.10.2018)
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**PATENT COOPERATION TREATY**

**TRANSLATION**

From the  
INTERNATIONAL SEARCHING AUTHORITY

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year)	<b>31.05.2017</b>
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Applicant's or agent's file reference <b>PJ8230WD</b>	<b>FOR FURTHER ACTION</b> See paragraph 2 below
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International application No. <b>PCT/CN2017/079079</b>	International filing date (day/month/year) <b>31.03.2017</b>	Priority date (day/month/year) <b>31.03.2016</b>
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International Patent Classification (IPC) or both national classification and IPC  
**H04L5/00 (2006.01) i**

Applicant  
**HUAWEI TECHNOLOGIES CO., LTD.**

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 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/CN	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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Box No. I Basis of this 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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International application No. PCT/CN2017/079079
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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>
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1. Statement									
Novelty (N)		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">1-28</td> <td style="width: 10%; padding: 2px;">YES</td> </tr> <tr> <td style="padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">None</td> <td style="padding: 2px;">NO</td> </tr> </table>	Claims	1-28	YES	Claims	None	NO	
Claims	1-28	YES							
Claims	None	NO							
Inventive step (IS)		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">None</td> <td style="width: 10%; padding: 2px;">YES</td> </tr> <tr> <td style="padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">1-28</td> <td style="padding: 2px;">NO</td> </tr> </table>	Claims	None	YES	Claims	1-28	NO	
Claims	None	YES							
Claims	1-28	NO							
Industrial applicability (IA)		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">1-28</td> <td style="width: 10%; padding: 2px;">YES</td> </tr> <tr> <td style="padding: 2px;">Claims</td> <td style="border-bottom: 1px solid black; padding: 2px;">None</td> <td style="padding: 2px;">NO</td> </tr> </table>	Claims	1-28	YES	Claims	None	NO	
Claims	1-28	YES							
Claims	None	NO							

2. Citations and explanations:	
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[1]	D1: WO 2015057367 A1, 23 April 2015 (23.04.2015)
[2]	D2: CN 103249153 A, 14 August 2013 (14.08.2013)
[3]	D1 discloses a method for wireless communication, and specifically discloses (see claims 1-30, description, paragraphs [0099] to [0138], and figures 6A to 10): a node sends to UE, on a physical carrier in a shared spectrum, a control format indicator value with respect to a frame; wherein each subframe sent by the node comprises a first EPDCCH (equivalent to a first downlink portion) and a second EPDCCH (equivalent to a second downlink portion).
[4]	Claim 1 differs from D1 in that: (1) a base station determines a first time unit structure; (2) a unit structure having multiple combinations of downlink portions, uplink portions and GPs is

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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

included; (3) a first time unit can also be a mini-timeslot, a set of mini-timeslots, a timeslot, a set of timeslots, a set of subframes and a frame.

[5] To a person skilled in the art, (1) since a base station is required to send an indicator to UE, the base station correspondingly determining a first time unit structure would be a conventional means in the art. (2) Uplink and downlink signals in claim 1 are common signals in the art, and a combined structure formed by uplink and downlink portions and GPs is a conventional means in the art. (3) The other time units in claim 1 are conventional means in the art. Thus, claim 1 is novel but does not involve an inventive step.

[6] The additional technical features of dependent claims 2-7 are partly disclosed by D1 and partly conventional means in the art. Thus, claims 2-7 are novel but do not involve an inventive step.

[7] D2 discloses a method for distributing dynamic frame structures of a Time Division Duplexing (TDD) system, and specifically discloses (see claims 1-16, description, paragraphs [0035] to [0048], and figures 1 to 5): an evolved NodeB (eNB) sends to user equipment (UE) a radio resource control protocol (RRC) instruction for entering a dynamic configuration frame structure state, and sends frame structure configuration information in a physical downlink control channel

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Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

(PDCCH); the UE receives the RRC instruction, then detects the frame structure configuration information in the PDCCH, and configures, according to the detected configuration information, a frame structure used by a next configuration cycle. A frame sent by the UE to the eNB includes a combination of uplink and downlink data.

[8] Claim 8 differs from D2 in that: (1) a base station determines a first time unit structure; (2) a time structure is a unit structure having multiple combinations of downlink portions, uplink portions and GPs; (3) a first time unit can also be a mini-timeslot, a set of mini-timeslots, a timeslot, a set of timeslots, a set of subframes and a frame.

[9] To a person skilled in the art, (1) since a base station is required to send an indicator to UE, the base station correspondingly determining a first time unit structure would be a conventional means in the art. (2) Uplink and downlink signals in claim 8 are common signals in the art, and a combined structure formed by uplink and downlink portions and GPs is a conventional means in the art. (3) The other time units in claim 8 are conventional means in the art. Thus, claim 8 is novel but does not involve an inventive step.

[10] The additional technical features of dependent claims 9-14 are partly disclosed by D2 and partly

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Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

conventional means in the art. Thus, claims 9-14 are novel but do not involve an inventive step.

[11] Claims 15-28 set forth a base station corresponding to claims 1-14; using a functional unit to implement a corresponding function is a conventional means in the art. For the same reasons as those given with respect to claims 1-14, claims 15-28 are novel but do not involve an inventive step.

[12] Claims 1-28 are industrially applicable.