

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

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BEIJING SANYOU INTELLECTUAL PROPERTY
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PCT

WRITTEN OPINION OF THE
 INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) 10 February 2020	
Applicant's or agent's file reference WPI19TW0867	FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/CN2019/119071	International filing date (day/month/year) 18 November 2019
Priority date (day/month/year) 27 November 2018	
International Patent Classification (IPC) or both national classification and IPC H04W 72/04(2009.01)i	
Applicant MEDIATEK INC.	

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/ National Intellectual Property Administration, PRC China 6, Xitucheng Rd., Jimen Bridge, Haidian District, Beijing 100088	Date of completion of this opinion 31 January 2020	Authorized officer MEN, Xiaojing
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International application No.

PCT/CN2019/119071

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:
 - 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 13*ter*.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 13*ter*.1(a)).
 - on paper or in the form of an image file (Rule 13*ter*.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 and industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	<u>1-16</u>	YES
	Claims	<u>None</u>	NO
Inventive step (IS)	Claims	<u>None</u>	YES
	Claims	<u>1-16</u>	NO
Industrial applicability (IA)	Claims	<u>1-16</u>	YES
	Claims	<u>None</u>	NO

2. Citations and explanations :

[1] **Reference is made to the following document:**

[2] D1: Resource Allocation for PUCCH transmission

[3] **1. Novelty**

[4] D1 is regarded as the closest prior art. D1 discloses (see pages 1 to 4): A set of PUCCH resources at least for HARQ-ACK which is configured to a UE by high layer signaling is defined as one of followings.
Opt.2: One or multiple set(s) of PUCCH resources for each PUCCH format. Similar to LTE CA, multiple PUCCH formats for different UCI payloads are semi-statically configured, and multiple set of frequency/code resource are configured for each PUCCH format accordingly. For a given PUCCH duration, one PUCCH format is dynamically selected according to the actual UCI payload under certain conditions. Then, the set of frequency/code resource is also determined. ARI selects one PUCCH resource with frequency/code resource of determined set. Time resource (slot index, starting symbol/duration and short/long PUCCH) and frequency/code resource are separately indicated by DCI. A set of frequency/code resources for each duration of each PUCCH format is configured and ARI indicates one resource.

[5] Independent claims 1 and 9 differ from D1 in that: receiving configuration information of PUCCH resources, receiving an index from a PUCCH resource indicator field in a DCI and determining multiple PUCCH resources from the determined one or more PUCCH resource sets based on the received index.

[6] The prior art disclosed in the document given above does not explicitly or implicitly disclose all the technical solutions of claims 1-16 respectively, therefore claims 1-16 are novel, and meet the criteria set out in PCT Article 33 (2).

[7] **2. Inventive Step**

[8] The technical problem to be solved by the technical solutions of claims 1 and 9 may therefore be regarded as how to inform UE of configuration information. But it is common knowledge in the art that BS sends UE configuration information of PUCCH resources. And transmitting index in a DCI to inform UE that PUCCH resources should be determined according to the index is also common knowledge in the art.

[9] The additional features of claims 2-8 and 10-16 have been partially disclosed by D1, and the remaining features are common knowledge in the art.

[10] It would be obvious to a person skilled in the art, to apply the common knowledge to D1, thereby obtaining the technical solutions according to claims 1-16. Therefore claims 1-16 do not involve an inventive step, and do not meet the criteria set out in PCT Article 33(3).

[11] **3. Industrial Applicability**

[12] The technical solutions claimed by claims 1-16 can be made or used in the industry, so claims 1-16 have industrial applicability and meet the criteria set out in PCT Article 33 (4).