

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:
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INVITATION TO PAY ADDITIONAL FEES
 AND, WHERE APPLICABLE, PROTEST FEE
 (PCT Article 17(3)(a) and Rule 40.1 and 40.2(e))

	Date of mailing (day/month/year) 17 October 2018 (17-10-2018)
Applicant's or agent's file reference P112969PCT	PAYMENT DUE within ONE MONTH from the above date of mailing
International application No. PCT/EP2018/070903	International filing date (day/month/year) 1 August 2018 (01-08-2018)
Applicant SONY CORPORATION	

1. This International Searching Authority

(i) considers that there are 2 (number of) inventions claimed in the international application covered by the claims indicated on an extra sheet:

(ii) therefore considers that **the international application does not comply with the requirements of unity of invention** (Rules 13.1, 13.2 and 13.3) for the reasons indicated on an extra sheet:

(iii) has carried out a partial international search (see Annex) will establish the international search report on those parts of the international application which relate to the invention first mentioned in claims Nos.:
see extra sheet

(iv) will establish the international search report on the other parts of the international application only if, and to the extent to which, additional fees are paid.

2. Consequently, the applicant is hereby **invited to pay**, within the time limit indicated above, the amount indicated below:

<u>EUR 1.775,00</u>	x	<u>1</u>	=	<u>EUR 1.775,00</u>
Fee per additional invention		number of additional inventions		currency/total amount of additional fees

3. The applicant is informed that, according to Rule 40.2(c), **the payment of any additional fee may be made under protest**, i.e., a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive, where applicable, subject to the payment of a protest fee.
 Where the applicant pays additional fees under protest, the applicant is hereby invited, within the time limit indicated above, to pay a protest fee (Rule 40.2(e)) in the amount of EUR 875,00 (currency/amount)

Where the applicant has not, within the time limit indicated above, paid the required protest fee, the protest will be considered not to have been made and the International Searching Authority will so declare.

4. Claim(s) Nos. _____ have been found to be unsearchable under Article 17(2)(b) because of defects under Article 17(2)(a) and therefore have not been included with any invention.

Name and mailing address of the International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040 Fax: (+31-70) 340-3016	Authorized officer TAZELAAR, Tamara Tel: +31 (0)70 340-2103
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This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10, 12, 14-17

PDDCH scheduling information is received based on received group control information.

2. claims: 11, 13

PDDCH reception is restored when it is determined that it has not been received for a certain number of DRX off periods.

This Authority considers that the application does not meet the requirements of unity of invention and that there are 2 inventions covered by the claims indicated as follows:

Group I: claims 1 - 10, 12, 14 - 17

Group II: claims 11, 13

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The single general concept underlying the subject-matter of the claims of group I and group II, which is the solution of the problem of reducing power consumption of the receiver during DRX off periods, by means of controlling the receiver to reduce power consumption in accordance with a DRX off period in which no signals representing scheduling information are received, is known from document D1 (see paragraphs 2, 3: DRX operation).

The concept underlying the subject matter of the claims of group II, which is the solution of the problem of reducing reception delay at the UE, by means of "in response to determining that the number of the plurality of the DRX off periods in which the signals providing a wake up signal have not been received exceeds a predetermined threshold, controlling the receiver to restore power to the receiver so as to receive scheduling information via a physical downlink control channel during a next DRX on period in which signals representing scheduling information may be transmitted by the wireless communications network via the physical downlink control channel" is new and inventive over D1. Claims of groups I and II are not linked by a single general inventive concept.

The claims of group I aim to solve the problem of reducing power consumption, by performing PDDCH reception when it is determined that the UE belongs to an addressed group. This solution is known from D1.

The claims of group II aim to solve the problem of maintaining high communication speed, by reducing the delay of reception of scheduling information at the UE.

It is therefore considered that the subject-matter of the claims of groups I and II is not unitary.

1. The present communication is an Annex to the invitation to pay additional fees (Form PCT/ISA/206). It shows the results of the international search established on the parts of the international application which relate to the invention first mentioned in claims Nos.:
- see 'Invitation to pay additional fees'
2. This communication is not the international search report which will be established according to Article 18 and Rule 43.
3. If the applicant does not pay any additional search fees, the information appearing in this communication will be considered as the result of the international search and will be included as such in the international search report.
4. If the applicant pays additional fees, the international search report will contain both the information appearing in this communication and the results of the international search on other parts of the international application for which such fees will have been paid.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>HUAWEI ET AL: "Considerations on 'wake-up signal' for eFeMTC", 3GPP DRAFT; R1-1704282, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE</p> <p>, vol. RAN WG1, no. Spokane, USA; 20170403 - 20170407 2 April 2017 (2017-04-02), XP051242434, Retrieved from the Internet: URL: http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN1/Docs/ [retrieved on 2017-04-02] the whole document</p> <p align="center">----- -/--</p>	1-10, 12, 14-17



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>APPLE INC: "Control Indicator in Group-common PDCCH for UE Power Saving", 3GPP DRAFT; R1-1710907 CONTROL INDICATOR IN GROUP-COMMON PDCCH FOR UE POWER SAVING, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIP</p> <p>, vol. RAN WG1, no. Qingdao, China; 20170627 - 20170630 26 June 2017 (2017-06-26), XP051300108, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN1/Docs/ [retrieved on 2017-06-26] the whole document</p>	1-10,12, 14-17
X	<p align="center">-----</p> <p>US 2005/180378 A1 (LEE YOUNG D [KR] ET AL) 18 August 2005 (2005-08-18) abstract paragraph [0026] - paragraph [0081] figures 1-6</p>	1-10,12, 14-17
X	<p align="center">-----</p> <p>QUALCOMM INCORPORATED: "Advanced Grant Indication for UE Power Saving", 3GPP DRAFT; R1-1711187 ADVANCED GRANT INDICATION FOR U E POWER SAVING, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; F</p> <p>, vol. RAN WG1, no. Qingdao, P.R. China; 20170627 - 20170630 26 June 2017 (2017-06-26), XP051300386, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN1/Docs/ [retrieved on 2017-06-26] the whole document</p> <p align="center">-----</p>	1-10,12, 14-17

Patent Family Annex

Information on patent family members

International Application No

PCT/EP2018/070903

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005180378	A1	18-08-2005	
		BR PI0505987 A	24-10-2006
		CN 1820434 A	16-08-2006
		EP 1636924 A1	22-03-2006
		HK 1090190 A1	09-04-2010
		KR 20050073244 A	13-07-2005
		US 2005180378 A1	18-08-2005
		WO 2005067182 A1	21-07-2005

Application no:
Demande n°: PCT/EP2018/070903
Anmelde-Nr:

DISCLAIMER

The attached provisional opinion on the patentability of the first invention searched serves only as information.
A reply addressing the points raised in the opinion is **not** required and will **not** be taken into account when issuing the final search report and opinion on patentability.

AVERTISSEMENT

L'avis provisoire ci-joint sur la brevetabilité de la première invention recherchée ne sert qu'à titre d'information.
Une réponse abordant les points soulevés dans l'avis n'est **pas** nécessaire et ne sera **pas** prise en compte lors de l'établissement du rapport final de la recherche et de l'avis sur la brevetabilité.

DISCLAIMER

Die beigefügte vorläufige Stellungnahme zur Patentierbarkeit der ersten geprüften Erfindung dient lediglich zur Information.
Eine Antwort auf die erhobenen Punkte in der Stellungnahme ist **nicht** erforderlich und bleibt bei der Erstellung des endgültigen Recherchenberichts und der Stellungnahme zur Patentierbarkeit **unberücksichtigt**.

Re Item IV

Lack of unity of invention

1.0 This Authority considers that the application does not meet the requirements of unity of invention and that there are 2 inventions covered by the claims indicated as follows:

Group I: claims 1 - 10, 12, 14 - 17

Group II: claims 11, 13

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The single general concept underlying the subject-matter of the claims of group I and group II, which is the solution of the problem of reducing power consumption of the receiver during DRX off periods, by means of controlling the receiver to reduce power consumption in accordance with a DRX off period in which no signals representing scheduling information are received, is known from document D1 (see paragraphs 2, 3: DRX operation).

The concept underlying the subject matter of the claims of group II, which is the solution of the problem of reducing reception delay at the UE, by means of "in response to determining that the number of the plurality of the DRX off periods in which the signals providing a wake up signal have not been received exceeds a predetermined threshold, controlling the receiver to restore power to the receiver so as to receive scheduling information via a physical downlink control channel during a next DRX on period in which signals representing scheduling information may be transmitted by the wireless communications network via the physical downlink control channel" is new and inventive over D1.

Claims of groups I and II are not linked by a single general inventive concept.

The claims of group I aim to solve the problem of reducing power consumption, by performing PDDCH reception when it is determined that the UE belongs to an addressed group. This solution is known from D1 (see point 3.1 below).

The claims of group II aim to solve the problem of maintaining high communication speed, by reducing the delay of reception of scheduling information at the UE.

It is therefore considered that the subject-matter of the claims of groups I and II is not unitary.

The partial search report will be drawn up for the claims of group I.

Re Item V

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

2.0 Reference is made to the following documents:

- D1 HUAWEI ET AL: "Considerations on 'wake-up signal' for eFeMTC",
3GPP DRAFT; R1-1704282, 3RD GENERATION PARTNERSHIP
PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE
DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE
,
vol. RAN WG1, no. Spokane, USA; 20170403 - 20170407 2 April 2017
(2017-04-02), XP051242434,
Retrieved from the Internet:
URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN1/Docs/
[retrieved on 2017-04-02]
- D2 APPLE INC: "Control Indicator in Group-common PDCCH for UE Power
Saving",
3GPP DRAFT; R1-1710907 CONTROL INDICATOR IN GROUP-
COMMON PDCCH FOR UE POWER SAVING, 3RD GENERATION
PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ;
650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIP
,
vol. RAN WG1, no. Qingdao, China; 20170627 - 20170630 26 June 2017
(2017-06-26), XP051300108,
Retrieved from the Internet:
URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN1/Docs/
[retrieved on 2017-06-26]
- D3 US 2005/180378 A1 (LEE YOUNG D [KR] ET AL) 18 August 2005
(2005-08-18)
- D4 QUALCOMM INCORPORATED: "Advanced Grant Indication for UE
Power Saving",
3GPP DRAFT;
R1-1711187_ADVANCED_GRANT_INDICATION_FOR_UE_POWER_S
AVING, 3RD GENERATION PARTNERSHIP PROJECT (3GPP),
MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ;
F-06921 SOPHIA-ANTIPOLIS CEDEX ; F

,
vol. RAN WG1, no. Qingdao, P.R. China; 20170627 - 20170630 26 June
2017 (2017-06-26), XP051300386,
Retrieved from the Internet:
URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN1/Docs/
[retrieved on 2017-06-26]

3.0 The present application does not meet the criteria of Article 33(2) PCT, because the subject-matter of claims 1, 12, 14, 17 is not new.

3.1 Regarding claim 1, the document D1 discloses:

A method of receiving signals by a communications device from a wireless communications network, the method comprising:

- controlling a receiver of the communications device to reduce a power consumption in accordance with a discontinuous reception, DRX, off period in which no signals representing scheduling information are received via a physical downlink control channel when in a connected mode and in which the communications device can reduce a power to the receiver (**see section 3: DRX operation in connected mode; see fig. 1**);
- controlling the receiver of the communications device to increase the power consumption so as to detect whether or not signals from a group control channel have been received by the receiver either during the DRX off period or during a first time slot of a DRX on period in which signals representing scheduling information may be transmitted by the wireless communications network via the physical downlink control channel and in which the communications device may increase the power to the receiver, the group control channel providing a channel of a wireless access interface provided by the wireless communications network for receiving group control information transmitted by the wireless communications network for a group of communications devices, the communications device being a member of the group, and the group control information received on the group control channel providing an indication of whether the communications device should configure the receiver to receive the scheduling information on the physical downlink control channel during a time period (**see section 2: "To reduce UE's power consumption, it will be beneficial to transmit a wake-up signal/channel before the MPDCCH with CRC scrambled by the P-RNTI. And the wake-up signal/channel should be easier to decode or detect than MPDCCH. As the UE using DRX in idle mode needs only**

to monitor one PO per DRX cycle, one wake-up signal/channel can also be monitored by the UE per DRX cycle. The P-RNTI scrambled MPDCCH or the paging message is usually addressing a group of UEs."),

and,

- if the signals from the group control channel have been received by the receiver and the group control information indicates that the communications device should configure the receiver to receive the scheduling information on the physical downlink control channel during the time period and the time period is within the DRX on period, then controlling the receiver to restore power to the receiver so as to receive the scheduling information via the physical downlink control channel during the time period within the DRX on period indicated by the group control information, receiving the signals representing scheduling information via the physical downlink control channel of the wireless access interface, and configuring the receiver to receive signals via a shared channel of the wireless access interface in accordance with the scheduling information **(see section 2: "To reduce UE's power consumption, it will be beneficial to transmit a wake-up signal/channel before the MPDCCH with CRC scrambled by the P-RNTI. And the wake-up signal/channel should be easier to decode or detect than MPDCCH. As the UE using DRX in idle mode needs only to monitor one PO per DRX cycle, one wake-up signal/channel can also be monitored by the UE per DRX cycle. The P-RNTI scrambled MPDCCH or the paging message is usually addressing a group of UEs."**).

Therefore claim 1 is not new.

3.2 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 12, 14, 17 which therefore are also considered not new.

3.3 Similar objections as the ones under points 3.0 - 3.2 can also be raised based on documents D2 (see in particular section 3), D3 (paragraphs 28 - 33 and claim 1; please note that the devices that participate in the "point-to-multipoint services" correspond to the "group" of claim 1), D4 (see in particular paragraphs 2.1.1 in combination with par. 2.2.2).

3.4 Dependent claims 2 - 10, 15, 16 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, because the features they disclose are known from documents D1 - D4, or appear to be normal design options.

Re Item VII

Certain defects in the international application

4.0 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

4.1 Independent claims 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).

4.2 To meet the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1 - D4 should be identified and briefly discussed in the description.

4.3 The attention of the applicant is drawn to the fact that the application may not be amended in such a way that it contains subject-matter which extends beyond the content of the application as filed (Article 43(2)(b)PCT).

Re Item VIII

Certain observations on the international application

5.0 The application does not meet the requirements of Article 6 PCT, because claim 1 is not clear.

It is clear from the description on page 1, lines 34 - 40; page 2, lines 29 - 30 that the objective of the claimed invention is to reduce the power consumption of the networked devices. It appears that the feature that achieves this reduction of power consumption is the feature of claim 6 (i.e the reduction of power consumption of the receiver under the specific conditions). Therefore this feature is essential to the definition of the invention, however it is absent from the current wording of claim 1.

Since independent claim 1 does not contain this feature it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

The same applies to claim 12.
