

**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 KETI0698PCT	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. PCT/KR2016/006827	International filing date ( <i>day/month/year</i> ) 27 June 2016 (27.06.2016)	Priority date ( <i>day/month/year</i> ) 30 June 2015 (30.06.2015)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant KOREA ELECTRONICS TECHNOLOGY INSTITUTE			

<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 6 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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<p align="center">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 338 82 70</p>	<p>Date of issuance of this report 02 January 2018 (02.01.2018)</p>
	<p>Authorized officer</p> <p align="center"><b>Kihwan Moon</b></p> <p>e-mail: pct.team1@wipo.int</p>

**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>29.09.2016</b>
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Applicant's or agent's file reference <b>KETI0698PCT</b>	<b>FOR FURTHER ACTION</b> See paragraph 2 below
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International application No. <b>PCT/KR2016/006827</b>	International filing date (day/month/year) <b>27.06.2016</b>	Priority date (day/month/year) <b>30.06.2015</b>
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International Patent Classification (IPC) or both national classification and IPC  
**H01Q7/00 (2006.01) i, H01Q21/28 (2006.01) i, H02J7/02 (2016.01) i**

Applicant  
**KOREA ELECTRONICS TECHNOLOGY INSTITUTE**

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

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/KR2016/006827

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 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:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No. PCT/KR2016/006827
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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)	Claims	1-6	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-6	NO
Industrial applicability (IA)	Claims	1-6	YES
	Claims	None	NO

2. Citations and explanations:	
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Reference is made to the following document:

D1: KR 10-2015-0055755 A (HANRIM POSTECH LLC) 22 May 2015

1. Novelty and Inventive step

1.1. Claims 1 to 5

1.1.1 Independent Claim: Claim 1

Document D1 which is the closest prior art to the invention as set forth in claim 1 discloses an induced power transmission unit (see claim 1 of D1); and a hybrid wireless power transmission device (see claim 1 of D1). However, document D1 is different from the invention as set forth in claim 1 in that document D1 does not explicitly disclose the structure in which a magnetic resonance element unit and an antenna are arranged to be spaced from each other, set forth in claim 1. However, said difference could be easily conceived of by a person

**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

skilled in the art from the magnetic resonance power transmission unit (see claim 1 of D1); and the transmission coil for transmitting induced power and the transmission antenna structure for transmitting resonance power (see claim 1 of D1), which are disclosed in document D1. Therefore, the invention as set forth in claim 1 would be obvious in view of document D1, and thus lacks an inventive step under PCT Article 33(3).

1.1.2 Dependent Claims: Claims 2 to 5

The additional technical feature set forth in claim 2 corresponds to a general technical matter which could be derived through a simple design change from the magnetic resonance power transmission unit comprising an antenna, and a second variable capacitor block connected to the antenna, disclosed in document D1 (see claim 1 of document D1).

The additional technical feature set forth in claim 3 corresponds to a general technical matter which could be derived through a simple design change from the induced power transmission unit for adjusting an induced power signal on the basis of induced power state information, disclosed in document D1 (see claim 3 of D1).

The additional technical features set forth in claims 4 and 5 correspond to a general technical matter which could be derived through a simple design change from: the transmission coil for transmitting induced power; and the transmission antenna for transmitting resonance power, which are disclosed in document D1 (see claim 1 of D1).

**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

Therefore, the invention as set forth in claims 2 to 5 would be obvious in view of document D1, and thus lacks an inventive step under PCT Article 33(3).

### 1.3 Claim 6

#### 1.3.1 Independent Claim: Claim 6

The invention as set forth in claim 6 is different from claim 1 in that the former further comprises first and second power transmission stations compared to the antenna set forth in claim 1. However, said difference corresponds to a general technical matter which could be derived through a simple design change from: the transmission coil for transmitting induced power, and the transmission antenna for transmitting resonance power (see claim 1 of D1); and the feature of adjusting a signal through a first variable capacitor and a second variable capacitor (see claim 1 of D1), which are disclosed in document D1, and is thus considered to be substantially the same as the invention as set forth in claim 1. Therefore, the invention as set forth in claim 6 thus lacks an inventive step under PCT Article 33(3).

### 2. Industrial Applicability

The invention as set forth in claims 1 to 6 is industrially applicable under PCT Article 33(4).