ATTORNEY'S DOCKET NO. WTCY-0026-P01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.:	12/567,716
Filing Date:	September 25, 2009
Applicant:	Morris P. Kesler et al.
Title:	WIRELESS ENERGY TRANSFER SYSTEMS
Group Art Unit:	2828
Examiner:	KAPLAN, Hal Ira
Conf. No.:	4901

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et seq.*, the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Supplemental Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee or statement is required with the Supplemental Information Disclosure Statement. However, if an Office Action on the merits has been mailed, the Commissioner is hereby authorized to charge the required fees to Deposit Account No. 50-4262 in order to have this Supplemental Information Disclosure Statement considered.

Pursuant to 37 C.F.R. 1.98(a)(2), Applicant believes that copies of cited U.S. Patents and Published and Non-Published Applications identifiable by USPTO Serial Number are no longer required to be provided to the Office. Notification of this change to this effect was provided in the United States Patent and Trademark Office OG Notices dated October 12, 2004 and October

19, 2004. Thus, Applicant has not included copies of any US Patents or US Patent Applications identifiable by serial number that may be cited with this submission. Should the Office require copies to be provided, Applicant respectfully requests that notice of such requirement be directed to Applicant's below-signed representative. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. 1.98(a)(2).

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Respectfully submitted on January 7, 2011,

STRATEGIC PATENTS, P.C.

/John H. Nortrup, Reg. No. 59,063/
John H. Nortrup
Telephone: 207-985-2126

Customer Number 43520

PTO/SB/08a (01-08)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Complete if Known	
Application Number	12/567,716
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Examiner Name	KAPLAN, Hal Ira

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First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	8	of	14	Attorney Docket No: WTCY-0026-P01

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference MIT.11757PCT	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2006/026480	International filing date *(day/month/year)* 05 July 2006 (05.07.2006)	Priority date *(day/month/year)* 12 July 2005 (12.07.2005)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant MASSACHUSETTS INSTITUTE OF TECHNOLOGY		

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).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   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.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	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 Article 35(2) 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

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.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 44*bis* .2).

	Date of issuance of this report 29 January 2008 (29.01.2008)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Agnes Wittmann-Regis
Facsimile No. +41 22 338 82 70	e-mail: pt06.pct@wipo.int

Form PCT/IB/373 (January 2004)

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INTERNATIONAL SEARCHING AUTHORITY

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2006/026480	05.07.2006	12.07.2005

International Patent Classification (IPC) or both national classification and IPC
INV. H02J17/00

Applicant
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

1. This opinion contains indications relating to the following items:

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- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.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 usually 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 notifed the International Bureau under Rule 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	see form PCT/ISA/210	Lund, Michael Telephone No. +31 70 340-2388

Form (PCT/ISA/237) (Cover Sheet) (April 2005)

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 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished 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 and/or table relating thereto 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:

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Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	2-5 7 9-13 15-19 21
	No:	Claims	1 6 8 14 20
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-21
Industrial applicability (IA)	Yes:	Claims	1-21
	No:	Claims	

2. Citations and explanations

see separate sheet

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Exhibit 1002
Page 419

Scanned 2/28/2008

Re Item V

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

Reference is made to the following documents:
D1: EP1335477
D2: US2133494
D3: WO9217929
D4: US5528113

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

1.1 The document D1 discloses (the references in parentheses applying to this document):
A method of transferring energy comprising:
providing a first resonator structure **(resonating cable 201)** *receiving energy from an external power supply, said first resonator structure having a first resonant frequency omega1, and a first Q- factor Q1, and characteristic size L1, and providing a second resonator structure* **(secondary inductance and capacitance 401,402)** *being positioned distal from said first resonator structure, at closest distance D, said second resonator structure having a second resonant frequency omega2, and a second Q-factor Q2, and characteristic size L2 wherein the two said frequencies omega1 and omega2 are close to within the narrower of the two resonance widths gamma1, and gamma2* **(see section 1.3a)**,
transferring energy non-radiatively **(see section 1.3b)** *between said first resonator structure and said second resonator structure, said energy transfer being mediated through coupling of their resonant-field evanescent tails* **(see section 1.3c)**, *and the rate of energy transfer between said first resonator and said second resonator being denoted by kappa, wherein non-radiative means D* **(see section 1.3d)** *is smaller than each of the resonant wavelengths Lambda1 and Lambda2* **(the wavelength at 100KHz is 3000 Meters; the wavelength at 1MHz is 300 Meters; the wavelength at 10MHz is 30 Meters; the wavelength at 100MHz is 3 Meters; the wavelength at 1GHz is 30 Centimeters)**, *wherein c is the propagation speed of radiation in the surrounding medium.*

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Scanned 2/28/2008

1.2 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claim 6, which therefore is also not considered new and inventive.

1.3 Clarity issues: More issues of clarity relate to claim 1 and need to be addressed in order to judge upon the content of claim 1.
1.3a The wording *"...are close to within the narrower of the two resonance widths..."* was understood for the search as both the two frequencies being chosen such that both the first and second resonating structures display a high quality factor. Else the advantage of resonant coupling would be lost. Re-phrasing should be considered.
1.3b The wording *"...transferring energy non-radiatively..."* is not considered to be clear per ce for two reasons: firstly, as energy is transferred from one resonator to the other in an electromagnetic or dielectric manner the energy appears to be "radiated" from the first resonator to the second (the non-radiatively seems to replace the confined radiation described at the start of page 2), secondly, non-radiatively must be interpreted as that no radiation can be observed and not as that a field that is much weaker than the field between the two resonators exists.
1.3c The wording *"...energy transfer being mediated through coupling of their resonant-field evanescent tails..."* contains the word "mediated" that was interpreted for the search as "promoted", which is in line with what is written in the two first lines of page 3 of the description. The coupling of the "evanescent fields", i.e. the out-skirt of the coupling field, is of non-specified nature such that any inherent coupling resulting from the resonant coupling will perform coupling of the "evanescent fields".
In D1, column 11, lines 46-50 the observation of such coupling, that causes a weakening of the field outside the resonant coupling, is disclosed. This phenomena is likewise disclosed in other of the prior art documents and appears to be linked to the observation of improved energy transfer at mutual resonance.
1.3d "D" is used both to designate a "closest distance" and "non-radiative means". What appears to be a double use of a single reference symbol must be clarified.

1.4 A number of prior art documents that describe energy transfer over distances, using resonant coupling between two resonators and operating in the KHz, MHz or GHz range, were retrieved The documents disclose that improved energy transfer is possible that way, and more of the documents describe that at resonance the fields are to a large extend

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confined between the two resonators such that other resonators outside only tend to see little field strength.
Though the present application is carrying out an analysis based on mathematics, the qualitative results appears to be the same as those observed in the prior art.

2. Dependent claims 2-5 claim the use of resonators with high quality factor. Though the quality factors mentioned here are above what is often seen in the prior art, the improvement in energy transfer with raise in quality factor is known from the prior art; as example see D3, page 16, lines 32-34. The high quality factors appear rather to be "goals to be achieved" (desiderata), and not the means to achieve these goals, and it may appear surprising to the person skilled in the art that such high quality factors of above 1000 can be maintained in resonators when transferring significant amount of energy. For these reasons the subject matter of claims 2-5 and 7 cannot be considered as involving an inventive step (Article 33(3) PCT).

3. Dependent claims 8-21 appear to be a listing of a large number of resonator-types and characteristics that may be useful for the energy transfer. Some of these resonator types are known from the prior art that is cited, others not. The listing in claims 8-21 leaves the impression that these resonators and characteristics only will perform as expected, and that none are clearly preferable as none will exhibit particularly good or surprising performance. They provide a mere choice between a number of ordinary alternatives. For these reasons the subject matter of claims 8-21 cannot be considered as involving an inventive step (Article 33(3) PCT).

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
01997-358WO2		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2007/070892	11/06/2007	28/03/2007
Applicant		
MASSACHUSETTS INSTITUTE OF TECHNOLOGY		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the **language**, the international search was carried out on the basis of:
      [X] 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))
   b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,
   a. the figure of the **drawings** to be published with the abstract is Figure No. 1
      [X] as suggested by the applicant
      [ ] as selected by this Authority, because the applicant failed to suggest a figure
      [ ] as selected by this Authority, because this figure better characterizes the invention
   b. [ ] none of the figures is to be published with the abstract

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/070892

A. CLASSIFICATION OF SUBJECT MATTER
INV. H02J17/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H02J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 38 24 972 A (ROLAND HIERING ET AL.) 12 January 1989 (1989-01-12) abstract claims 2,20 column 3, line 64 - column 4, line 2 column 5, line 14 - line 23 column 6, line 36 - line 39 figure 1 -----	1-366
X	DE 100 29 147 A (ULF TIEMENS) 20 December 2001 (2001-12-20) abstract paragraphs [0001], [0006] claims 1,4 -----	1-366

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family 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

Date of the actual completion of the international search	Date of mailing of the international search report
26 February 2008	03/03/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Lund, Michael

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Form PCT/ISA/210 (second sheet) (April 2005)

InductEV, Inc.
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Page 424

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 10 2005 036290 A (GEBRÜDER FREI GMBH) 15 February 2007 (2007-02-15) paragraphs [0010], [0011], [0014], [0032], [0036] claims 5-7 figure 2	1-366
X	WO 92/17929 A (JAMES WILLIAM PIPER) 15 October 1992 (1992-10-15) abstract page 16, line 32 - line 34 page 18, line 26 - line 30	1-366
X	US 2 133 494 A (H.F.WATERS) 18 October 1938 (1938-10-18) column 2, line 10 - line 52 column 6, line 1 - line 11	1-366
X	US 2005/085873 A1 (JOHN C. GORD ET AL.) 21 April 2005 (2005-04-21) abstract figure 1 paragraphs [0014], [0016]	1-366
X	US 2002/032471 A1 (SCOTT M. LOFTIN ET AL.) 14 March 2002 (2002-03-14) abstract figure 1 paragraphs [0006], [0007], [0022], [0029], [0031]	1-366
X	WO 96/02970 A (AUCLAND UNISERVICES LIMITED) 1 February 1996 (1996-02-01) abstract page 1, line 18 - line 21 page 2, line 22 - line 23 page 5, line 29 page 8, line 31 - line 32 page 9, line 16 page 10, line 2 - line 5 page 14, line 11 - line 13 page 15, line 8 - line 10	1-366
X	US 5 528 113 A (JOHN T. BOYS ET AL.) 18 June 1996 (1996-06-18) column 1, line 12 - line 18 column 7, line 60 - column 8, line 3	1-366
X	WO 93/23908 A (AUCKLAND UNISERVICES LIMITED) 25 November 1993 (1993-11-25) page 1, line 11 - line 14 page 1, line 20 - line 27 page 2, line 21 - line 28 page 4, line 6 - line 15 claim 1	1-366
3	-/--	

InductEV, Inc.
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Page 425

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 535 543 A (C.C. DAILEY) 20 October 1970 (1970-10-20) column 1, line 12 - line 22 column 1, line 41 - line 46	1
A	WO 2007/008646 A (MASSACHUSETTS INSTITUTE OF TECHNOLOGY) 18 January 2007 (2007-01-18) the whole document	1-366
A	US 2003/199778 A1 (MARLIN MICKLE ET AL.) 23 October 2003 (2003-10-23) abstract figure 1 paragraphs [0014], [0052]	113, 153-155, 306,347, 348
A	US 6 798 716 B1 (ARTHUR CHARYCH) 28 September 2004 (2004-09-28) figure 1 column 1, line 6 - line 10 column 1, line 25 - line 45 column 1, line 65 - column 2, line 6 column 2, line 19 - line 27 column 4, line 35 - line 38 column 4, line 48 - line 52 column 4, line 67 - column 5, line 12	113, 153-155, 306,347, 348
A	DE 103 04 584 A (ABB RESEARCH LTD) 19 August 2004 (2004-08-19) abstract paragraph [0014]	113, 153-155, 306,347, 348

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2007/070892

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3824972 A	12-01-1989	NONE	
DE 10029147 A	20-12-2001	NONE	
DE 102005036290 A	15-02-2007	NONE	
WO 9217929 A	15-10-1992	AU 1237392 A	02-11-1992
		ES 2125256 T3	01-03-1999
		MX 9201100 A1	01-09-1992
		US 5293308 A	08-03-1994
US 2133494 A	18-10-1938	NONE	
US 2005085873 A1	21-04-2005	NONE	
US 2002032471 A1	14-03-2002	US 7079901 B1	18-07-2006
		US 7092762 B1	15-08-2006
WO 9602970 A	01-02-1996	AU 682120 B2	18-09-1997
		AU 2810395 A	16-02-1996
		EP 0786165 A1	30-07-1997
US 5528113 A	18-06-1996	AU 8006494 A	08-05-1995
		AU 8006594 A	08-05-1995
		DE 4498007 T0	21-11-1996
		DE 69432262 D1	17-04-2003
		EP 0727105 A1	21-08-1996
		JP 3630452 B2	16-03-2005
		JP 7170681 A	04-07-1995
		WO 9511544 A1	27-04-1995
		WO 9511545 A1	27-04-1995
		US 5821638 A	13-10-1998
WO 9323908 A	25-11-1993	AU 4093493 A	13-12-1993
		DE 69330516 D1	06-09-2001
		DE 69330516 T2	25-04-2002
		EP 0640254 A1	01-03-1995
		ES 2163409 T3	01-02-2002
		JP 3512798 B2	31-03-2004
		JP 8501435 T	13-02-1996
		US 5898579 A	27-04-1999
US 3535543 A	20-10-1970	NONE	
WO 2007008646 A	18-01-2007	AU 2006269374 A1	18-01-2007
US 2003199778 A1	23-10-2003	NONE	
US 6798716 B1	28-09-2004	NONE	
DE 10304584 A	19-08-2004	NONE	

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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2007/070892	11.06.2007	28.03.2007

International Patent Classification (IPC) or both national classification and IPC
INV. H02J17/00

Applicant
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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 43*bis*.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 usually 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 notifed the International Bureau under Rule 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	see form PCT/ISA/210	Lund, Michael Telephone No. +31 70 340-2388

Form (PCT/ISA/237) (Cover Sheet) (April 2005)

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 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished 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 and/or table relating thereto 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:

InductEV, Inc.
Exhibit 1002
Page 429

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	7-41 44-58 60-71 74-141 143-156 158-170 179 186 192 193 200-234 237-251 253-264 267-334 336-345 347-349 351-363 366
	No:	Claims	1-6,42 43 59 72 73 142 157 171-178 180-185 187-191 194-199 235 236 252 265 266 335 346 350 364 365
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-366
Industrial applicability (IA)	Yes:	Claims	1-366
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V

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

Reference is made to the following documents:
D1: DE3824972
D2: DE102005036290
D3: WO92/17929
D4: US2133494
D5: US2005/0085873
D6: US2002/0032471
D7: WO96/02970
D8: US5528113
D9: WO93/23908
D10: WO2007008646
D11: US2003/0199778
D12: US6798716
D13: DE10304584
D14: DE10029147

1. The application contains a large number of claims and a substantial number of issues that appear to lack clarity, that seems to be contradictory and claim "goals to be achieved" (desiderata) instead of the tangible technical features that achieve the goals. Therefore the scope of the application is not clear and confined. The basic concept of wireless power transfer using resonant coupling between resonators is clear but well known from the prior art. Further than what is known from the prior art a large number of claims appears to be based on various selection of values in trivial ranges and desiderata without clearly specifying tangible, technical features. This leaves the person skilled in the art in doubt if an improved wireless power transfer system has been found, compared to what is already known from the prior art, and which technical features that cause such improved performance. Here the mentioning of a huge number of possible features leaves the impression that none of these are known in particular to cause an unexpected and surprising effect and that none of these will involve an inventive step. The application is not

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concise in the sense of Article 6, PCT and Rule 6, PCT.
For these reasons the application is considered to be complex of nature and not fulfilling the requirements of Article 6 PCT.

The examiner has chosen from his understanding of a number of claims and consideration of the nature of the further claims to include the following analysis and comments as it is considered expedient for the further procedure:

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

2.1 The document D1 discloses (the references in parentheses applying to this document):
An apparatus for use in wireless energy transfer **(Fig.1)**, *the apparatus comprising:*
a first resonator structure **(7,8,9)** *configured to transfer energy non-radiatively with a second resonator structure* **(2)** *over a distance D greater than a characteristic size* **(See paragraph 4. with comments on "characteristic size")** *L1 of the first resonator structure and greater than a characteristic size* **(See paragraph 4. with comments on "characteristic size")** *L2 of the second resonator structure,*
wherein the non-radiative energy transfer **(See paragraph 4. with comments on "non-radiative")** *is mediated by a coupling of a resonant field evanescent tail of the first resonator structure and a resonant field evanescent tail of the second resonator structure* **(the "field evanescent tail" is inherent and the coupling is not specified to be of a particular type)**.

2.2 The document D14 discloses (the references in parentheses applying to this document):
An apparatus for use in wireless energy transfer **(Fig.0)**, *the apparatus comprising:*
a first resonator structure **(2)** *configured to transfer energy non-radiatively with a second resonator structure* **(7/8)** *over a distance D greater than a characteristic size* **(See paragraph 4. with comments on "characteristic size")** *L1 of the first resonator structure and greater than a characteristic size* **(See paragraph 4. with comments on "characteristic size")** *L2 of the second resonator structure,*
wherein the non-radiative energy transfer **(See paragraph 4. with comments on "non-radiative")** *is mediated by a coupling of a resonant field evanescent tail of the first*

resonator structure and a resonant field evanescent tail of the second resonator structure **(the "field evanescent tail" is inherent and the coupling is not specified to be of a particular type)**.

2.3 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 171, 174, 180, 187 and 194 which therefore are also considered not new and inventive.

3. Dependent claims:

Claims 2, 175, 181, 188, 195: The resonant structure transferring the energy may be called the "first resonant structure".

Claims 3, 182, 196: The resonant structure transferring the energy may be called the "second resonant structure".

Claims 4, 176, 183, 189, 197: The second resonant structure is included in the independent claim.

Claims 5, 172, 177, 184, 190, 198: Definition of parameters that are inherent.

Claims 6, 173, 178, 185, 191, 199: Operation at the common resonance frequency is described in the prior art.

Claims 7-13, 23-25, 78, 131, 165, 166 , 200-206, 216-218, 271, 324, 358, 359: The quality factor of the resonators is claimed to be high (>100; >1000; >10000): whereas it is known from the prior art that the coupling of energy increases with an increase in the quality factor of the resonators and that a high quality factor is desirable, it is not obvious for the person skilled in the art how such quality factors can be maintained in a system for transfer of significant power when the second resonator is considerably loaded. A clarification of this is needed.

Claims 14-22, 26-28, 45-58, 64-71, 74-77, 79-112, 114-126, 130, 132-141, 143-152,

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158-164, 179, 186, 192, 193, 207-215, 219-221, 238-251, 253-264, 267-270, 272-305, 307-319, 323, 325-334, 336-345, 351-357: A large number of claims are describing characteristics of the system with values that appear to be varied in trivial ranges and do not appear to cause an unexpected and surprising effect. The fact that the applicant chooses to include claims with each a part of a range leaves the impression that the applicant is not aware of a particular effect caused by a particular value compared to the other values that are contained in the claims, such that none of these values will involve an inventive step.

Claims 29-33, 60-63, 222-226: A number of claims refer to properties of the system that are results of technical features used in the system but are not technical features themselves. These properties are often results to be achieved by the technical features and are inherent effects that has values that depend on the technical features. Such claims attempt to define the subject-matter in terms of the result to be achieved, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.
One such property is the efficiency that is claimed in a number of claims to include the range from 1% to 100%. An apparatus for use in wireless energy transfer is very likely to have an efficiency in the range of 1%-100%. The efficiency achieved does not involve an inventive step whereas the means that causes the efficiency to be at a certain level may involve an inventive step.
Low efficiency levels in the order of 1% or 10% appear to be an indication that a significant part of the energy transmitted from the first resonator structure is not picked up by the second resonator structure but lost before. This indicates that a significant part of the energy is radiated outside the fields interacting between the two resonator structures and that the system described is not performing "non-radiative energy transfer".

Claims 34-37, 227-230 : A radiation loss that is measurable is contradicting the fact that the system is stated to perform "non-radiative energy transfer".
A number of claims refer to properties of the system that are results of technical features used in the system but are not technical features themselves. These properties are often results to be achieved by the technical features and are inherent effects that has values that depend on the technical features. Such properties do not involve an inventive step.

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Claims 38-41, 231-234 : The loss to a human does not comply with the system being stated to perform "non-radiative energy transfer", further does the loss to a human appear to be heavily dependent on the particular human and the situation of this human with respect to the system.
A number of claims refer to properties of the system that are results of technical features used in the system but are not technical features them selves. These properties are often results to be achieved by the technical features and are inherent effects that has values that depend on the technical features. Such properties do not involve an inventive step.

Claims 42, 43, 59, 142, 235, 236, 252 : Inherent in a system as claimed in the independent claim.

Claims 44, 237, 366: The objective problem points at the solution.

Claims 72, 73, 157, 265, 266, 335, 346, 350, 364, 365 : Known from the prior art.

Claims 113, 153-155, 306, 347, 348: The prior art acknowledge that other energy transfer than electromagnetic may be employed. Examples of systems employing other energy transfer than electromagnetic are mentioned in US2003/0199778 (D11). US6798716 (D12) is describing an example using ultrasound for power transmission and DE10304584 (D13) an example of electrostatic coupling.
Resonators that are compliant with such other type of energy transfer will need to be used. It is not obvious to the person skilled in the art how dielectric energy transfer with tenths of watts and over significant distances can be achieved.

Claims 127-129, 320-322: Use of "self resonant conducting wire coils", meaning coils with the capacitive part formed by the intrinsic capacitance between the windings is known from the prior art.

Claims 156, 349: A "whispering gallery mode" is a term that appears related to optical resonators and waveguides The use of light in general is foreseen in US2003/0199778 (D11). The frequency of light seems to extend beyond the frequencies proposed in other claims. Further, the examining division is not sure if a "whispering gallery mode" is compatible with other characteristics claimed in the dependent claims. However, the use of

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a "whispering gallery mode" is not known from the prior art that is considered the closest for the technical concept of claim 1. The examining division would appreciate a statement from the applicant if the applicant considers that the "whispering gallery mode" is a technical feature that will cause the effects described in the application and allow tenths of watt to be transferred wirelessly through air. It should be reminded that a large number of claims refer to the use of resonantly coupled coils such that a change of the technology necessary to solve the problem may cause an objection of unity to be raised.

Claims 167-170, 360-363: It is trivial that a third resonant structure of the same type may couple with the first or second resonant structure as the mechanism for coupling remains the same. This is further known from the prior art.

4. The following general comments should be considered by the applicant:

4.1 More of the claims, hereunder claim 1, uses the term "characteristic size" of a resonator. "Characteristic size" is not well defined in the field and may refer to a physical dimension of the resonator without making which dimension clear, or for instance refer to a wavelength that may be radiated by the resonator. The "characteristic size" is used in dependent claim to describe further characteristics.
"Characteristic size" is found not to comply with Article 6 PCT due to lack of clarity.

4.2 The term "non-radiative" is used in a number of claims. "Non-radiative" must be interpreted such that no significant radiation can be observed outside of the path connecting the first and second resonators. This appears not to be the case in the present situation for the reason that a number of the claims containing "non-radiative" do not include features that clearly will focus fields from the first resonator towards the second resonator. Therefore only the resonant interaction is a feature that may influence the distribution of the field. Further, more dependent claims mention an efficiency in the order of 1% such that this must be taken as an indication that a considerable part of the field is not interacting with the energy receiving resonator but is radiated elsewhere. This is supported by dependent claims mentioning "a radiation loss".
"Non-radiative" may be a term attributed by the applicant in order to praise the probably reduced level of radiation compared to a situation with no second resonator, such as

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described in the prior art, but with a general misleading interpretation. As "non-radiative" would be a result of technical features and not in itself a tangible technical feature of the system, "non-radiative" is a result to be achieved (desideratum) that lacks clarity in how it is being achieved.

4.3 A number of dependent claims describe the quality factor of the resonators to be high (even more than 10000). Whereas it is known from the prior art that the coupling of energy increases with an increase in the quality factor of the resonators, it is not obvious for the person skilled in the art how such quality factors can be maintained in a system for transfer of significant power when the second resonator is considerably loaded. A clarification of this is needed.

4.4 A large number of claims are describing characteristics of the system with values that appear to varied in trivial ranges and do not appear to cause an unexpected and surprising effect. The fact that the applicant chooses to include claims with each a part of a range leave the impression that the applicant is not aware of a particular effect caused by a particular value compared to the other values that are contained in the claims, such that none of these values will involve an inventive step.

4.5 The application at present can only be treated to the extend that it is clear and unambiguous. A large number of the claims appear to contain elements that lack clarity and results to be achieved as replacement of tangible technical features. When such a situation is remedied and the proper technical features of each claim are clear, the features may lack unity in the sense of Rule 13 PCT. In the regional phase of the application a number of different technical concepts may be found after clarification and corresponding objections of lack of unity raised.

4.6 Whereas the basic concept of wireless power transfer using resonant coupling between resonators is clear, but known from the prior art, the applicant should be aware that "scientific theories" are exempted from patenting (Rule 39 PCT). If the applicant has a further understanding of the mechanism that makes the systems known from the prior art work, but no further tangible technical features that causes an unexpected and surprising effect are added to the system, the further enlightenment of the applicant may be characterised as elaborating on a scientific theory.

5. In order to clarify eventual differences between the prior art and the present application a short description of examples and statements in the prior art and a summary of the prior art may be expedient:

D1 (DE3824972): Wireless power transfer system with lamps containing resonant secondary coils that are coupling with a resonant primary at the resonance frequency. Distances up to 5 metres are mentioned.

D2 (DE102005036290): RFID device with power transferred wirelessly from a resonant primary to a resonant secondary over a distance that is larger than the wavelength.

D3 (WO92/17929): A contact less power distribution system with resonant primary- and pick-up circuit and with high quality factor because more power can be extracted this way. It is experienced that low loading of the pick-up circuit can prevent power from reaching other pick-up circuits. This is believed to be caused by high circulating currents in the pick-up coil interacting with the primary coil.

D4 (US2133494): System for transmitting electrical power without wire connection employing resonant conditions in both the energy transmitting and receiving circuits, tuned to the generator frequency whereby the losses in the system are reduced to a minimum.

D5 (US2005/0085873): Resonantly tuned, high quality factor energy transfer system with coils. More efficient energy transfer is known to take place with a high quality factor in the coupling.

D6 (US2002/0032471): A primary and secondary (implanted) coil operating at tuned resonance for efficient power transfer. It is known that a high Q resonant circuit promotes efficient power transfer.

D7 (W096/02970): An inductively powered lamp unit preferably operating in resonance. It is known that transmission of electrical power over significant gaps is feasible with resonant primary and secondary conductors. It is experienced that the resonant secondary currents tends to block the primary current from reaching past this secondary coil and

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reach other secondary coils.

D8 (US5528113): A loosely coupled inductive power transfer system with a statement that electric power can be transferred "across a significant space". Use of resonant or tuned primary and secondary inductive elements for the sake of greatly improved effectiveness prevents proper transfer to other consumers further away than the secondary inductive element.

D9 (WO93/23908): A non-contact power distribution system with resonant primary and secondary circuits operating at the same resonant frequency in order to maximise the quality factor and enhance coupling and power transfer.

D10 (WO2007/008646): Wireless non-radiative energy transfer system, from the same applicant, that is forming part of the prior art.

Examples of systems employing other energy transfer than electromagnetic are mentioned in US2003/0199778 (D11). US6798716 (D12)is describing an example using ultrasound for power transmission and DE10304584 (D13) an example of electrostatic coupling.

5.1 In conclusion a large number of prior art documents describe power transfer using mutually coupled resonators operating in the vicinity of the resonant frequency. It is well known that the higher the quality factor of the resonators are, the better the energy is coupled. It is also an observed fact in the prior art that the field around the energy receiving resonator is influenced by the resonant coupling such that little field is observed around the energy receiving resonator. The coupling may be near-field or remote-field and the field may be focussed in the direction of the other resonator. It is known from the prior art that not only electromagnetic coupling may be employed but also other type of coupling. A wide range of frequencies from the KHz-range to the GHz-range is employed.

5.2 The part of the application with tangible technical features, though containing some terms that are considered to lack clarity, appears to be known from the prior art. A huge number of dependent claims are listing characteristics and desiderata of the system and it is at present not clear to the examining division if any of these characteristics may relate to a special technical feature that cause unexpected and surprising effects.

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It is the hope of the examining division that the above description of the prior art may help the applicant in identifying which one of the many different characteristics that can be argued to be a special technical feature and involve an inventive step (Article 33(3) PCT).

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International Application Number:	
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First Named Inventor/Applicant Name:	Morris P. Kesler
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Application Type:	Utility under 35 USC 111(a)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2007/070892	11 June 2007 (11.06.2007)	27 March 2007 (27.03.2007)

Applicant
MASSACHUSETTS INSTITUTE OF TECHNOLOGY et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 01997-358WO2	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2007/070892	International filing date *(day/month/year)* 11 June 2007 (11.06.2007)	Priority date *(day/month/year)* 27 March 2007 (27.03.2007)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant MASSACHUSETTS INSTITUTE OF TECHNOLOGY		

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).

2. This REPORT consists of a total of 14 sheets, including this cover sheet.

   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.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	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 Article 35(2) 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

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.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 44*bis* .2).

	Date of issuance of this report 29 September 2009 (29.09.2009)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Philippe Becamel e-mail: pt12.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2007/070892	11.06.2007	28.03.2007

International Patent Classification (IPC) or both national classification and IPC
INV. H02J17/00

Applicant
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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 43*bis*.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 usually 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 notifed the International Bureau under Rule 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	see form PCT/ISA/210	Lund, Michael Telephone No. +31 70 340-2388

Form (PCT/ISA/237) (Cover Sheet) (April 2005)

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 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished 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 and/or table relating thereto 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:

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Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	7-41 44-58 60-71 74-141 143-156 158-170 179 186 192 193 200-234 237-251 253-264 267-334 336-345 347-349 351-363 366
	No:	Claims	1-6,42 43 59 72 73 142 157 171-178 180-185 187-191 194-199 235 236 252 265 266 335 346 350 364 365
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-366
Industrial applicability (IA)	Yes:	Claims	1-366
	No:	Claims	

2. Citations and explanations

see separate sheet

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Re Item V

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

Reference is made to the following documents:
D1: DE3824972
D2: DE102005036290
D3: WO92/17929
D4: US2133494
D5: US2005/0085873
D6: US2002/0032471
D7: WO96/02970
D8: US5528113
D9: WO93/23908
D10: WO2007008646
D11: US2003/0199778
D12: US6798716
D13: DE10304584
D14: DE10029147

1. The application contains a large number of claims and a substantial number of issues that appear to lack clarity, that seems to be contradictory and claim "goals to be achieved" (desiderata) instead of the tangible technical features that achieve the goals. Therefore the scope of the application is not clear and confined. The basic concept of wireless power transfer using resonant coupling between resonators is clear but well known from the prior art. Further than what is known from the prior art a large number of claims appears to be based on various selection of values in trivial ranges and desiderata without clearly specifying tangible, technical features. This leaves the person skilled in the art in doubt if an improved wireless power transfer system has been found, compared to what is already known from the prior art, and which technical features that cause such improved performance. Here the mentioning of a huge number of possible features leaves the impression that none of these are known in particular to cause an unexpected and surprising effect and that none of these will involve an inventive step. The application is not

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concise in the sense of Article 6, PCT and Rule 6, PCT.
For these reasons the application is considered to be complex of nature and not fulfilling the requirements of Article 6 PCT.

The examiner has chosen from his understanding of a number of claims and consideration of the nature of the further claims to include the following analysis and comments as it is considered expedient for the further procedure:

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

2.1 The document D1 discloses (the references in parentheses applying to this document):
An apparatus for use in wireless energy transfer **(Fig.1)**, *the apparatus comprising:*
a first resonator structure **(7,8,9)** *configured to transfer energy non-radiatively with a second resonator structure* **(2)** *over a distance D greater than a characteristic size* **(See paragraph 4. with comments on "characteristic size")** *L1 of the first resonator structure and greater than a characteristic size* **(See paragraph 4. with comments on "characteristic size")** *L2 of the second resonator structure,*
wherein the non-radiative energy transfer **(See paragraph 4. with comments on "non-radiative")** *is mediated by a coupling of a resonant field evanescent tail of the first resonator structure and a resonant field evanescent tail of the second resonator structure* **(the "field evanescent tail" is inherent and the coupling is not specified to be of a particular type)**.

2.2 The document D14 discloses (the references in parentheses applying to this document):
An apparatus for use in wireless energy transfer **(Fig.0)**, *the apparatus comprising:*
a first resonator structure **(2)** *configured to transfer energy non-radiatively with a second resonator structure* **(7/8)** *over a distance D greater than a characteristic size* **(See paragraph 4. with comments on "characteristic size")** *L1 of the first resonator structure and greater than a characteristic size* **(See paragraph 4. with comments on "characteristic size")** *L2 of the second resonator structure,*
wherein the non-radiative energy transfer **(See paragraph 4. with comments on "non-radiative")** *is mediated by a coupling of a resonant field evanescent tail of the first*

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resonator structure and a resonant field evanescent tail of the second resonator structure **(the "field evanescent tail" is inherent and the coupling is not specified to be of a particular type).**

2.3 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 171, 174, 180, 187 and 194 which therefore are also considered not new and inventive.

3. Dependent claims:

Claims 2, 175, 181, 188, 195: The resonant structure transferring the energy may be called the "first resonant structure".

Claims 3, 182, 196: The resonant structure transferring the energy may be called the "second resonant structure".

Claims 4, 176, 183, 189, 197: The second resonant structure is included in the independent claim.

Claims 5, 172, 177, 184, 190, 198: Definition of parameters that are inherent.

Claims 6, 173, 178, 185, 191, 199: Operation at the common resonance frequency is described in the prior art.

Claims 7-13, 23-25, 78, 131, 165, 166 , 200-206, 216-218, 271, 324, 358, 359: The quality factor of the resonators is claimed to be high (>100; >1000; >10000): whereas it is known from the prior art that the coupling of energy increases with an increase in the quality factor of the resonators and that a high quality factor is desirable, it is not obvious for the person skilled in the art how such quality factors can be maintained in a system for transfer of significant power when the second resonator is considerably loaded. A clarification of this is needed.

Claims 14-22, 26-28, 45-58, 64-71, 74-77, 79-112, 114-126, 130, 132-141, 143-152,

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158-164, 179, 186, 192, 193, 207-215, 219-221, 238-251, 253-264, 267-270, 272-305, 307-319, 323, 325-334, 336-345, 351-357: A large number of claims are describing characteristics of the system with values that appear to be varied in trivial ranges and do not appear to cause an unexpected and surprising effect. The fact that the applicant chooses to include claims with each a part of a range leaves the impression that the applicant is not aware of a particular effect caused by a particular value compared to the other values that are contained in the claims, such that none of these values will involve an inventive step.

Claims 29-33, 60-63, 222-226: A number of claims refer to properties of the system that are results of technical features used in the system but are not technical features themselves. These properties are often results to be achieved by the technical features and are inherent effects that has values that depend on the technical features. Such claims attempt to define the subject-matter in terms of the result to be achieved, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.
One such property is the efficiency that is claimed in a number of claims to include the range from 1% to 100%. An apparatus for use in wireless energy transfer is very likely to have an efficiency in the range of 1%-100%. The efficiency achieved does not involve an inventive step whereas the means that causes the efficiency to be at a certain level may involve an inventive step.
Low efficiency levels in the order of 1% or 10% appear to be an indication that a significant part of the energy transmitted from the first resonator structure is not picked up by the second resonator structure but lost before. This indicates that a significant part of the energy is radiated outside the fields interacting between the two resonator structures and that the system described is not performing "non-radiative energy transfer".

Claims 34-37, 227-230 : A radiation loss that is measurable is contradicting the fact that the system is stated to perform "non-radiative energy transfer".
A number of claims refer to properties of the system that are results of technical features used in the system but are not technical features themselves. These properties are often results to be achieved by the technical features and are inherent effects that has values that depend on the technical features. Such properties do not involve an inventive step.

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Claims 38-41, 231-234 : The loss to a human does not comply with the system being stated to perform "non-radiative energy transfer", further does the loss to a human appear to be heavily dependent on the particular human and the situation of this human with respect to the system.
A number of claims refer to properties of the system that are results of technical features used in the system but are not technical features them selves. These properties are often results to be achieved by the technical features and are inherent effects that has values that depend on the technical features. Such properties do not involve an inventive step.

Claims 42, 43, 59, 142, 235, 236, 252 : Inherent in a system as claimed in the independent claim.

Claims 44, 237, 366: The objective problem points at the solution.

Claims 72, 73, 157, 265, 266, 335, 346, 350, 364, 365 : Known from the prior art.

Claims 113, 153-155, 306, 347, 348: The prior art acknowledge that other energy transfer than electromagnetic may be employed. Examples of systems employing other energy transfer than electromagnetic are mentioned in US2003/0199778 (D11). US6798716 (D12) is describing an example using ultrasound for power transmission and DE10304584 (D13) an example of electrostatic coupling.
Resonators that are compliant with such other type of energy transfer will need to be used. It is not obvious to the person skilled in the art how dielectric energy transfer with tenths of watts and over significant distances can be achieved.

Claims 127-129, 320-322: Use of "self resonant conducting wire coils", meaning coils with the capacitive part formed by the intrinsic capacitance between the windings is known from the prior art.

Claims 156, 349: A "whispering gallery mode" is a term that appears related to optical resonators and waveguides The use of light in general is foreseen in US2003/0199778 (D11). The frequency of light seems to extend beyond the frequencies proposed in other claims. Further, the examining division is not sure if a "whispering gallery mode" is compatible with other characteristics claimed in the dependent claims. However, the use of

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a "whispering gallery mode" is not known from the prior art that is considered the closest for the technical concept of claim 1. The examining division would appreciate a statement from the applicant if the applicant considers that the "whispering gallery mode" is a technical feature that will cause the effects described in the application and allow tenths of watt to be transferred wirelessly through air. It should be reminded that a large number of claims refer to the use of resonantly coupled coils such that a change of the technology necessary to solve the problem may cause an objection of unity to be raised.

Claims 167-170, 360-363: It is trivial that a third resonant structure of the same type may couple with the first or second resonant structure as the mechanism for coupling remains the same. This is further known from the prior art.

4. The following general comments should be considered by the applicant:

4.1 More of the claims, hereunder claim 1, uses the term "characteristic size" of a resonator. "Characteristic size" is not well defined in the field and may refer to a physical dimension of the resonator without making which dimension clear, or for instance refer to a wavelength that may be radiated by the resonator. The "characteristic size" is used in dependent claim to describe further characteristics.
"Characteristic size" is found not to comply with Article 6 PCT due to lack of clarity.

4.2 The term "non-radiative" is used in a number of claims. "Non-radiative" must be interpreted such that no significant radiation can be observed outside of the path connecting the first and second resonators. This appears not to be the case in the present situation for the reason that a number of the claims containing "non-radiative" do not include features that clearly will focus fields from the first resonator towards the second resonator. Therefore only the resonant interaction is a feature that may influence the distribution of the field. Further, more dependent claims mention an efficiency in the order of 1% such that this must be taken as an indication that a considerable part of the field is not interacting with the energy receiving resonator but is radiated elsewhere. This is supported by dependent claims mentioning "a radiation loss".
"Non-radiative" may be a term attributed by the applicant in order to praise the probably reduced level of radiation compared to a situation with no second resonator, such as

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described in the prior art, but with a general misleading interpretation. As "non-radiative" would be a result of technical features and not in itself a tangible technical feature of the system, "non-radiative" is a result to be achieved (desideratum) that lacks clarity in how it is being achieved.

4.3 A number of dependent claims describe the quality factor of the resonators to be high (even more than 10000). Whereas it is known from the prior art that the coupling of energy increases with an increase in the quality factor of the resonators, it is not obvious for the person skilled in the art how such quality factors can be maintained in a system for transfer of significant power when the second resonator is considerably loaded. A clarification of this is needed.

4.4 A large number of claims are describing characteristics of the system with values that appear to varied in trivial ranges and do not appear to cause an unexpected and surprising effect. The fact that the applicant chooses to include claims with each a part of a range leave the impression that the applicant is not aware of a particular effect caused by a particular value compared to the other values that are contained in the claims, such that none of these values will involve an inventive step.

4.5 The application at present can only be treated to the extend that it is clear and unambiguous. A large number of the claims appear to contain elements that lack clarity and results to be achieved as replacement of tangible technical features. When such a situation is remedied and the proper technical features of each claim are clear, the features may lack unity in the sense of Rule 13 PCT. In the regional phase of the application a number of different technical concepts may be found after clarification and corresponding objections of lack of unity raised.

4.6 Whereas the basic concept of wireless power transfer using resonant coupling between resonators is clear, but known from the prior art, the applicant should be aware that "scientific theories" are exempted from patenting (Rule 39 PCT). If the applicant has a further understanding of the mechanism that makes the systems known from the prior art work, but no further tangible technical features that causes an unexpected and surprising effect are added to the system, the further enlightenment of the applicant may be characterised as elaborating on a scientific theory.

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5. In order to clarify eventual differences between the prior art and the present application a short description of examples and statements in the prior art and a summary of the prior art may be expedient:

D1 (DE3824972): Wireless power transfer system with lamps containing resonant secondary coils that are coupling with a resonant primary at the resonance frequency. Distances up to 5 metres are mentioned.

D2 (DE102005036290): RFID device with power transferred wirelessly from a resonant primary to a resonant secondary over a distance that is larger than the wavelength.

D3 (WO92/17929): A contact less power distribution system with resonant primary- and pick-up circuit and with high quality factor because more power can be extracted this way. It is experienced that low loading of the pick-up circuit can prevent power from reaching other pick-up circuits. This is believed to be caused by high circulating currents in the pick-up coil interacting with the primary coil.

D4 (US2133494): System for transmitting electrical power without wire connection employing resonant conditions in both the energy transmitting and receiving circuits, tuned to the generator frequency whereby the losses in the system are reduced to a minimum.

D5 (US2005/0085873): Resonantly tuned, high quality factor energy transfer system with coils. More efficient energy transfer is known to take place with a high quality factor in the coupling.

D6 (US2002/0032471): A primary and secondary (implanted) coil operating at tuned resonance for efficient power transfer. It is known that a high Q resonant circuit promotes efficient power transfer.

D7 (W096/02970): An inductively powered lamp unit preferably operating in resonance. It is known that transmission of electrical power over significant gaps is feasible with resonant primary and secondary conductors. It is experienced that the resonant secondary currents tends to block the primary current from reaching past this secondary coil and

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reach other secondary coils.

D8 (US5528113): A loosely coupled inductive power transfer system with a statement that electric power can be transferred "across a significant space". Use of resonant or tuned primary and secondary inductive elements for the sake of greatly improved effectiveness prevents proper transfer to other consumers further away than the secondary inductive element.

D9 (WO93/23908): A non-contact power distribution system with resonant primary and secondary circuits operating at the same resonant frequency in order to maximise the quality factor and enhance coupling and power transfer.

D10 (WO2007/008646): Wireless non-radiative energy transfer system, from the same applicant, that is forming part of the prior art.

Examples of systems employing other energy transfer than electromagnetic are mentioned in US2003/0199778 (D11). US6798716 (D12)is describing an example using ultrasound for power transmission and DE10304584 (D13) an example of electrostatic coupling.

5.1 In conclusion a large number of prior art documents describe power transfer using mutually coupled resonators operating in the vicinity of the resonant frequency. It is well known that the higher the quality factor of the resonators are, the better the energy is coupled. It is also an observed fact in the prior art that the field around the energy receiving resonator is influenced by the resonant coupling such that little field is observed around the energy receiving resonator. The coupling may be near-field or remote-field and the field may be focussed in the direction of the other resonator. It is known from the prior art that not only electromagnetic coupling may be employed but also other type of coupling. A wide range of frequencies from the KHz-range to the GHz-range is employed.

5.2 The part of the application with tangible technical features, though containing some terms that are considered to lack clarity, appears to be known from the prior art. A huge number of dependent claims are listing characteristics and desiderata of the system and it is at present not clear to the examining division if any of these characteristics may relate to a special technical feature that cause unexpected and surprising effects.

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It is the hope of the examining division that the above description of the prior art may help the applicant in identifying which one of the many different characteristics that can be argued to be a special technical feature and involve an inventive step (Article 33(3) PCT).

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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

To:
GAUTHIER & CONNORS, LLP
Attn. Connors, Matthew E.
225 Franklin Street, Suite 2300
Boston, MA 02110
ETATS-UNIS D'AMERIQUE

RECEIVED
DEC 26 2007
GAUTHIER & CONNORS LLP

Applicant's or agent's file reference MIT.11757PCT	Date of mailing *(day/month/year)* 21/12/2007
International application No. PCT/US2006/026480	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
Applicant MASSACHUSETTS INSTITUTE OF TECHNOLOGY	International filing date *(day/month/year)* 05/07/2006

1. [x] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Fascimile No.: (41-22) 338.82.70

   For more detailed instructions, see the notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no International search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within **20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

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, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Susanne Gundlach

Form PCT/ISA/220 (October 2005) *(See notes on accompanying sheet)*

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims,description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
MIT.11757PCT		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2006/026480	05/07/2006	12/07/2005
Applicant		
MASSACHUSETTS INSTITUTE OF TECHNOLOGY		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the **language**, the international search was carried out on the basis of:
      [X] 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))
   b. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**
   a. the figure of the **drawings** to be published with the abstract is Figure No. 1
      [X] as suggested by the applicant
      [ ] as selected by this Authority, because the applicant failed to suggest a figure
      [ ] as selected by this Authority, because this figure better characterizes the invention
   b. [ ] none of the figures is to be published with the abstract

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/026480

A. CLASSIFICATION OF SUBJECT MATTER
INV. H02J17/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H02J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 335 477 A (AUCKLAND UNISERVICES LIMITED) 13 August 2003 (2003-08-13) abstract paragraphs [0002], [0007], [0016], [0022], [0028] - [0030], [0064], [0086], [0088], [0100], [0109] figures 2,4	1-21
X	US 2 133 494 A (H.F.WATERS) 18 October 1938 (1938-10-18) figures 1,3,5 column 2, line 9 - line 52 column 6, line 1 - line 11	1-21

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family 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

Date of the actual completion of the international search	Date of mailing of the international search report
11 December 2007	21/12/2007

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Lund, Michael

1

Form PCT/ISA/210 (second sheet) (April 2005)

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Page 467

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/026480

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 92/17929 A (JAMES PIPER) 15 October 1992 (1992-10-15) abstract page 2, line 33 - line 35 page 4, line 25 - line 31 page 5, line 1 - line 5 page 16, line 22 - line 35 page 18, line 26 - line 30	1-21
X	US 5 528 113 A (JOHN T. BOYS ET AL.) 18 June 1996 (1996-06-18) abstract column 1, line 12 - line 18 column 4, line 65 - column 5, line 21 column 7, line 60 - column 8, line 1	1-21
X	WO 94/28560 A (ERA PATENTS LIMITED) 8 December 1994 (1994-12-08) page 2, line 33 - page 3, line 6 page 4, line 1 - line 10 page 7, line 16 - line 20	1,6
X	WO 93/23908 A (AUCKLAND UNISERVICES LIMITED) 25 November 1993 (1993-11-25) page 1, line 11 - line 14 page 1, line 20 - line 24 page 1, line 26 - line 27 page 2, line 21 - line 28 page 4, line 7 - line 15 claim 1	1,6
X	DE 38 24 972 A (ROLAND HIERING) 12 January 1989 (1989-01-12) abstract claims 1,2,15,17,20 column 3, line 67 - column 4, line 4 column 4, line 39 - line 43 column 4, line 49 - line 54 column 4, line 67 - column 5, line 4 column 5, line 14 - line 23 column 5, line 64 - column 6, line 4 column 6, line 36 - line 39 figures 1-3	1,6

1

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2006/026480

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP 1335477 A	13-08-2003	NONE		
US 2133494 A	18-10-1938	NONE		
WO 9217929 A	15-10-1992	AU	1237392 A	02-11-1992
		ES	2125256 T3	01-03-1999
		MX	9201100 A1	01-09-1992
		US	5293308 A	08-03-1994
US 5528113 A	18-06-1996	AU	8006494 A	08-05-1995
		AU	8006594 A	08-05-1995
		DE	4498007 T0	21-11-1996
		DE	69432262 D1	17-04-2003
		EP	0727105 A1	21-08-1996
		JP	3630452 B2	16-03-2005
		JP	7170681 A	04-07-1995
		WO	9511544 A1	27-04-1995
		WO	9511545 A1	27-04-1995
		US	5821638 A	13-10-1998
WO 9428560 A	08-12-1994	AU	6725694 A	20-12-1994
		DE	69404655 D1	04-09-1997
		DE	69404655 T2	27-11-1997
		EP	0700574 A1	13-03-1996
WO 9323908 A	25-11-1993	AU	4093493 A	13-12-1993
		DE	69330516 D1	06-09-2001
		DE	69330516 T2	25-04-2002
		EP	0640254 A1	01-03-1995
		ES	2163409 T3	01-02-2002
		JP	3512798 B2	31-03-2004
		JP	8501435 T	13-02-1996
		US	5898579 A	27-04-1999
DE 3824972 A	12-01-1989	NONE		

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2006/026480	05.07.2006	12.07.2005

International Patent Classification (IPC) or both national classification and IPC
INV. H02J17/00

Applicant
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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 43*bis*.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 usually 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 notifed the International Bureau under Rule 66.1*bis*(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.~~

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	see form PCT/ISA/210	Lund, Michael Telephone No. +31 70 340-2388

Form (PCT/ISA/237) (Cover Sheet) (April 2005)

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 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished 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 and/or table relating thereto 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:

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Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	2-5 7 9-13 15-19 21
	No:	Claims	1 6 8 14 20
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-21
Industrial applicability (IA)	Yes:	Claims	1-21
	No:	Claims	

2. Citations and explanations

see separate sheet

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Re Item V

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

Reference is made to the following documents:
D1: EP1335477
D2: US2133494
D3: WO9217929
D4: US5528113

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

1.1 The document D1 discloses (the references in parentheses applying to this document):
A method of transferring energy comprising:
providing a first resonator structure **(resonating cable 201)** *receiving energy from an external power supply, said first resonator structure having a first resonant frequency omega1, and a first Q- factor Q1, and characteristic size L1, and providing a second resonator structure* **(secondary inductance and capacitance 401,402)** *being positioned distal from said first resonator structure, at closest distance D, said second resonator structure having a second resonant frequency omega2, and a second Q-factor Q2, and characteristic size L2 wherein the two said frequencies omega1 and omega2 are close to within the narrower of the two resonance widths gamma1, and gamma2* **(see section 1.3a),**
transferring energy non-radiatively **(see section 1.3b)** *between said first resonator structure and said second resonator structure, said energy transfer being mediated through coupling of their resonant-field evanescent tails* **(see section 1.3c),** *and the rate of energy transfer between said first resonator and said second resonator being denoted by kappa, wherein non-radiative means D* **(see section 1.3d)** *is smaller than each of the resonant wavelengths Lambda1 and Lambda2* **(the wavelength at 100KHz is 3000 Meters; the wavelength at 1MHz is 300 Meters; the wavelength at 10MHz is 30 Meters; the wavelength at 100MHz is 3 Meters; the wavelength at 1GHz is 30 Centimeters),** *wherein c is the propagation speed of radiation in the surrounding medium.*

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1.2 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claim 6, which therefore is also not considered new and inventive.

1.3 Clarity issues: More issues of clarity relate to claim 1 and need to be addressed in order to judge upon the content of claim 1.
1.3a The wording *"...are close to within the narrower of the two resonance widths..."* was understood for the search as both the two frequencies being chosen such that both the first and second resonating structures display a high quality factor. Else the advantage of resonant coupling would be lost. Re-phrasing should be considered.
1.3b The wording *"...transferring energy non-radiatively..."* is not considered to be clear per ce for two reasons: firstly, as energy is transferred from one resonator to the other in an electromagnetic or dielectric manner the energy appears to be "radiated" from the first resonator to the second (the non-radiatively seems to replace the confined radiation described at the start of page 2), secondly, non-radiatively must be interpreted as that no radiation can be observed and not as that a field that is much weaker than the field between the two resonators exists.
1.3c The wording *"...energy transfer being mediated through coupling of their resonant-field evanescent tails..."* contains the word "mediated" that was interpreted for the search as "promoted", which is in line with what is written in the two first lines of page 3 of the description. The coupling of the "evanescent fields", i.e. the out-skirt of the coupling field, is of non-specified nature such that any inherent coupling resulting from the resonant coupling will perform coupling of the "evanescent fields".
In D1, column 11, lines 46-50 the observation of such coupling, that causes a weakening of the field outside the resonant coupling, is disclosed. This phenomena is likewise disclosed in other of the prior art documents and appears to be linked to the observation of improved energy transfer at mutual resonance.
1.3d "D" is used both to designate a "closest distance" and "non-radiative means". What appears to be a double use of a single reference symbol must be clarified.

1.4 A number of prior art documents that describe energy transfer over distances, using ~~resonant coupling between two resonators and operating in the KHz, MHz or GHz range,~~ were retrieved The documents disclose that improved energy transfer is possible that way, and more of the documents describe that at resonance the fields are to a large extend

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confined between the two resonators such that other resonators outside only tend to see little field strength.
Though the present application is carrying out an analysis based on mathematics, the qualitative results appears to be the same as those observed in the prior art.

2. Dependent claims 2-5 claim the use of resonators with high quality factor. Though the quality factors mentioned here are above what is often seen in the prior art, the improvement in energy transfer with raise in quality factor is known from the prior art; as example see D3, page 16, lines 32-34. The high quality factors appear rather to be "goals to be achieved" (desiderata), and not the means to achieve these goals, and it may appear surprising to the person skilled in the art that such high quality factors of above 1000 can be maintained in resonators when transferring significant amount of energy. For these reasons the subject matter of claims 2-5 and 7 cannot be considered as involving an inventive step (Article 33(3) PCT).

3. Dependent claims 8-21 appear to be a listing of a large number of resonator-types and characteristics that may be useful for the energy transfer. Some of these resonator types are known from the prior art that is cited, others not. The listing in claims 8-21 leaves the impression that these resonators and characteristics only will perform as expected, and that none are clearly preferable as none will exhibit particularly good or surprising performance. They provide a mere choice between a number of ordinary alternatives. For these reasons the subject matter of claims 8-21 cannot be considered as involving an inventive step (Article 33(3) PCT).

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Possible steps after receipt of the international search report (ISR) and written opinion of the International Searching Authority (WO-ISA)

General information	For all international applications filed on or after 01/01/2004 the competent ISA will establish an ISR. It is accompanied by the WO-ISA. Unlike the former written opinion of the IPEA (Rule 66.2 PCT), the WO-ISA is not meant to be responded to, but to be taken into consideration for further procedural steps. This document explains about the possibilities.
Amending claims under Art. 19 PCT	Within 2 months after the date of mailing of the ISR and the WO-ISA the applicant may file amended claims under Art. 19 PCT directly with the International Bureau of WIPO. The PCT reform of 2004 did not change this procedure. For further information please see Rule 46 PCT as well as form PCT/ISA/220 and the corresponding Notes to form PCT/ISA/220.
Filing a demand for international preliminary examination	In principle, the WO-ISA will be considered as the written opinion of the IPEA. This should, in many cases, make it unnecessary to file a demand for international preliminary examination. If the applicant nevertheless wishes to file a demand this must be done before expiry of 3 months after the date of mailing of the ISR/WO-ISA or 22 months after priority date, whichever expires later (Rule 54bis PCT). Amendments under Art. 34 PCT can be filed with the IPEA as before, normally at the same time as filing the demand (Rule 66.1 (b) PCT). If a demand for international preliminary examination is filed and no comments/amendments have been received the WO-ISA will be transformed by the IPEA into an IPRP (International Preliminary Report on Patentability) which would merely reflect the content of the WO-ISA. The demand can still be withdrawn (Art. 37 PCT).
Filing informal comments	After receipt of the ISR/WO-ISA the applicant may file informal comments on the WO-ISA directly with the International Bureau of WIPO. These will be communicated to the designated Offices together with the IPRP (International Preliminary Report on Patentability) at 30 months from the priority date. Please also refer to the next box.
End of the international phase	At the end of the international phase the International Bureau of WIPO will transform the WO-ISA or, if a demand was filed, the written opinion of the IPEA into the IPRP, which will then be transmitted together with possible informal comments to the designated Offices. The IPRP replaces the former IPER (international preliminary examination report).
Relevant PCT Rules and more information	Rule 43 PCT, Rule 43bis PCT, Rule 44 PCT, Rule 44bis PCT, PCT Newsletter 12/2003, OJ 11/2003, OJ 12/2003

PTO/SB/08a (01-08)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number..

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known	
Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	1	of	1	Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
		7825543	Nov 2, 2010	Karalis, Aristeidis et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear	T[2]

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No [1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]

EXAMINER **DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1449)
* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

Electronic Acknowledgement Receipt

EFS ID:	9191075
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	43520
Filer:	John H. Nortrop/Elizabeth Nortrup
Filer Authorized By:	John H. Nortrop
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	07-JAN-2011
Filing Date:	25-SEP-2009
Time Stamp:	17:24:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	NPL Documents	NPL-72_Sekitani-ALargeAreaFlexibleWirelessPowerTransmission.pdf	9826102 3295df609d591029b516f95f1de413d2f6bda7d5	no	3

Warnings:	
Information:	

2	NPL Documents	NPL-73_Sekitani-ALargeAreaWireless.pdf	503784 0af91e0280afadafccf25cdbb7c35fc4052873ce	no	5
Warnings:					
Information:					
3	NPL Documents	NPL-56_MITsWirelessElectricityForMobilePhones-Vanguard.pdf	67723 8db980e6efe8c271a9013126031131648353c0dc	no	1
Warnings:					
Information:					
4	NPL Documents	NPL-74_Sensiper-ElectromagneticWavePropogation.pdf	18209652 6cc11778c39db49c84142d92cdcd567d4d79f62f	no	295
Warnings:					
Information:					
5	NPL Documents	NPL-75_Soljacic-PhotonicCrystalSlowLightEnhancement-JOpt.pdf	430080 d86719ccfa77480f2634b53cc84bcec0c708c11e	no	8
Warnings:					
Information:					
6	NPL Documents	NPL-76_Soljacic-WirelessNonRadiativeEnergyTransfer.pdf	6787287 ad86808eade0f5afb6db47ef85473757ee2770b3	no	14
Warnings:					
Information:					
7	NPL Documents	NPL-77_Someya-TheWorldsFirstSheet-type.pdf	1483848 1da7b71f00b3cf9863c200360ea4c6242f83c117	no	18
Warnings:					
Information:					
8	NPL Documents	NPL-78_Splashpower.pdf	1594203 ecc8d8270a47290e2e149d20c4b95e929dc07147	no	30
Warnings:					
Information:					
9	NPL Documents	NPL-79_Staelin-ElectromagnetWavesRefChapter2_3_4_8.pdf	7992449 a7b1fc15564395f892ac896b9f49003d1bbbc20d	no	204
Warnings:					
Information:					
10	NPL Documents	NPL-80_Tesla-HighFrequencyOscillators-ProceedingsofthelEEE.pdf	105417 183559af2950984c2955f28373c9659560742382	no	11
Warnings:					
Information:					

11	NPL Documents	NPL-81_Tesla-HighFrequencyOscillators-TheElectricalEngineer.pdf	986529 3f0c8aef1cd7f36d10a92cc005c3835bce1d00b5	no	10
Warnings:					
Information:					
12	NPL Documents	NPL-3_Thomsen-UltrahighSpeedAllOptical.pdf	500015 b6fbd12865391c0ca95bb5b59f04ea579b81b928	no	2
Warnings:					
Information:					
13	NPL Documents	NPL-91_Vandevoorde-WirelessEnergyTransfer.pdf	9246320 2db111c4148c9ccc2fb5e6a03b55787e1a128cbc	no	7
Warnings:					
Information:					
14	NPL Documents	NPL-92_Vilkomerson-ImplantableDopplerSystem-IEEE.pdf	379368 b9703604e7f9f00d20ac16f25cf8e00538165384	no	5
Warnings:					
Information:					
15	NPL Documents	NPL-100_Yariv-CoupledResonatorOpticalWaveguideOpticsLetters.pdf	359152 04f4207a7e7a441b1616b683de7d066dbb624784	no	3
Warnings:					
Information:					
16	NPL Documents	NPL-42_YOSHIHIRO-MicrowaveElectronicCircuitTechnologyRef-Cha.pdf	2145392 1b128827ec86162b2d537649b1edc034a915e474	no	56
Warnings:					
Information:					
17	NPL Documents	NPL-101_Zierhofer-HighEfficiencyCoupling-IEEE.pdf	414058 33aae866ea73651fa96be78e0a7a3d1cf4d1501d	no	7
Warnings:					
Information:					
18	Information Disclosure Statement (IDS) Filed (SB/08)	WTCY-0026-P01_010711_Form1449-2.pdf	126681 c5f454a4fc41eab42b60befb80829c7235f1ed6b	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
		Total Files Size (in bytes):	61158060		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known	
Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	1	of	6	Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
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		2010/0034238	Feb 11, 2010	Bennett, James D.	

EXAMINER **DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1449)
* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known	
Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	2	of	6	Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
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		2010/0045114	Feb 25, 2010	Sample, Alanson P.	
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EXAMINER **DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1449)
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

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Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	3	of	6	Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
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Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	4	of	6	Attorney Docket No: WTCY-0026-P01

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Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	5	of	6	Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS					
Examiner Initial *	**Cite No**	**Document Number**	**Publication Date**	**Name of Patentee or Applicant of Cited Document**	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
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Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	6	of	6	Attorney Docket No: WTCY-0026-P01

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear	T[2]
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		WO-2010/030977	Mar 18, 2010	Lin, Jenshan et al.		

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No [1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	NPL-104	, "Application Serial No. 12/613,686 (Atty Ref WTCY-0026-P02), Notice of Allowance mailed 01-06-11", 1/6/2011 , 10	
	NPL-36	, "ISR and WO for Int'l Appl. No. PCT/US2009/58499", PCT/US09/58499 12/10/2009 , all	
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	NPL-105	SEKIYA, H. et al., "FM/PWM control scheme in class DE inverter.", IEEE Trans. Circuits Syst. 1, vol 51, no.7, July 2004 July 2007 , 1250-1260	

EXAMINER **DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1449)
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ATTORNEY'S DOCKET NO. WTCY-0026-P01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.:	12/567,716
Filing Date:	September 25, 2009
Applicant:	Morris P. Kesler et al.
Title:	WIRELESS ENERGY TRANSFER SYSTEMS
Group Art Unit:	2828
Examiner:	KAPLAN, Hal Ira
Conf. No.:	4901

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et seq.*, the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Supplemental Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee or statement is required with the Supplemental Information Disclosure Statement. However, if an Office Action on the merits has been mailed, the Commissioner is hereby authorized to charge the required fees to Deposit Account No. 50-4262 in order to have this Supplemental Information Disclosure Statement considered.

Pursuant to 37 C.F.R. 1.98(a)(2), Applicant believes that copies of cited U.S. Patents and Published and Non-Published Applications identifiable by USPTO Serial Number are no longer required to be provided to the Office. Notification of this change to this effect was provided in the United States Patent and Trademark Office OG Notices dated October 12, 2004 and October

19, 2004. Thus, Applicant has not included copies of any US Patents or US Patent Applications identifiable by serial number that may be cited with this submission. Should the Office require copies to be provided, Applicant respectfully requests that notice of such requirement be directed to Applicant's below-signed representative. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. 1.98(a)(2).

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Respectfully submitted on February 21, 2011,

STRATEGIC PATENTS, P.C.

/John H. Nortrup, Reg. No. 59,063/
John H. Nortrup
Telephone: 207-985-2126

Customer Number 43520

Electronic Acknowledgement Receipt

EFS ID:	9492197
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	43520
Filer:	John H. Nortrop/Elizabeth Nortrup
Filer Authorized By:	John H. Nortrop
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	22-FEB-2011
Filing Date:	25-SEP-2009
Time Stamp:	14:52:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	WTCY-0026-P01_022211_IDSCommunication.pdf	89898 718785c1c600bd5dc9a4918046c760e2a88fc0b2	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Filed (SB/08)	WTCY-0026-P01_022211_Form1449.pdf	161486 9238e12d04cf6c85e9510176721586 8e36362031	no	6
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	WO2009033043_A2.pdf	919252 a0fdefc316ef4131b675c03754cf48929aaacd92	no	24
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Information:					
4	Foreign Reference	WO2009070730_A2.pdf	894187 4d703dfe98912e53bb97035c630984edee86ea07	no	27
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5	Foreign Reference	WO2009126963_A2.pdf	717487 6e9fce27f70d4ea827d55b4aef84b6c86dc0fdab	no	14
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Information:					
6	Foreign Reference	WO2009155000_A2.pdf	835685 2a9f58be16d39885e97da14b2c80ed10029c0509	no	22
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7	Foreign Reference	WO2010090538.pdf	923778 ad2cc603a06afe6099fd941d7a66b42d835d0aac	no	29
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8	Foreign Reference	WO2010090539.pdf	1512605 380a7feeb3a83b04e6c1940526723aef7908b045	no	32
Warnings:					
Information:					
9	Foreign Reference	WO2007008646_A2.pdf	1179473 66b41211e95ea065462fe89cea81ef55c33c4d20	no	26
Warnings:					
Information:					
10	Foreign Reference	WO2009149464_A2.pdf	6112375 ff96b202a23fed1f645758fa419f18dec77de9b1	no	144

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Warnings:					
Information:					
15	NPL Documents	NPL-104_SN12613686_NoA-010611.PDF	459052 37325f95e4fb1ba5c27746904044b09f3592447d	no	10
Warnings:					
Information:					
16	NPL Documents	NPL-105_Sekiya-070104.pdf	393457 0d17031639ec69c28637af4ad11c061ffd0fe246	no	11
Warnings:					
Information:					
17	NPL Documents	NPL-106_Mediano-030107.pdf	741860 b9243a2d77caa09670295b2ec485f1c0c4251c7a	no	9
Warnings:					
Information:					
18	NPL Documents	NPL-36_PCTUS0958499_ISR-121009.pdf	1734428 a1586867bb90d74b13903ed94a5c272f4f0f1e6f	no	11
Warnings:					
Information:					
		Total Files Size (in bytes):	40277492		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
ROBERT A. MAZZARESE
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)*
Applicant's or agent's file reference WTCY0026PWO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US 09/58499	International filing date *(day/month/year)* 25 September 2009 (25.09.2009)
Applicant WITRICITY CORPORATION	

80157.E92W06

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 8270

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
ROBERT A. MAZZARESE
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 10 DEC 2009
Applicant's or agent's file reference WTCY0026PWO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US 09/58499	International filing date *(day/month/year)* 25 September 2009 (25.09.2009)
Applicant WITRICITY CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 8270

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference WTCY0026PWO	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US 09/58499	International filing date *(day/month/year)* 25 September 2009 (25.09.2009)	(Earliest) Priority Date *(day/month/year)* 27 September 2008 (27.09.2008)
Applicant WITRICITY CORPORATION		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out 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)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 1

   ☒ as suggested by the applicant.

   ☐ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 09/58499

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H03B 19/00 (2009.01)
USPC - 327/113
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC: 327/113

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 327/113, 306, 530, 555; 375/323; 307/134 (keyword limited - see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (PGPB, USPT, USOC, EPAB, JPAB); GOOGLE
Search Terms: energy, power, power generator, generator, wireless, resonator, first resonator, second resonator, third resonator, Q-factor, distance, tunable, oscillating, impedance, capacitance, load

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/0222542 A1 (Joannopoulos et al.) 27 September 2007 (27.09.2007), entire document, especially; abstract, para. [0004], [0005], [0013], [0014], [0019], [0023], [0025], [0029], [0033]	1 - 26
Y	US 6,452,465 B1 (Brown et al.) 17 September 2002 (17.09.2002), entire document, especially; abstract, col. 2, ln 4-6, col. 3, ln 7-12, 66-67	1 - 26

☐ Further documents are listed in the continuation of Box C. ☐

* 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 application or patent 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

Date of the actual completion of the international search	Date of mailing of the international search report
24 November 2009 (24.11.2009)	10 DEC 2009
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: ROBERT A. MAZZARESE
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	10 DEC 2009

Applicant's or agent's file reference	FOR FURTHER ACTION
WTCY0026PWO	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 09/58499	25 September 2009 (25.09.2009)	27 September 2008 (27.09.2008)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H03B 19/00 (2009.01)
USPC - 327/113

Applicant WITRICITY CORPORATION

1. This opinion contains indications relating to the following items:

- [X] 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
- [X] Box No. V Reasoned statement under Rule 43*bis*.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 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	27 November 2009 (27.11.2009)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/58499

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:

InductEV, Inc.
Exhibit 1002
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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/58499

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1 - 26	YES
	Claims	None.	NO
Inventive step (IS)	Claims	None.	YES
	Claims	1 - 26	NO
Industrial applicability (IA)	Claims	1 - 26	YES
	Claims	None.	NO

2. Citations and explanations:

Claims 1 - 26 lack an inventive step under PCT Article 33(3) as being obvious over US 2007/0222542 A1 to Joannopoulos et al. (hereinafter 'Joannopoulos'), in view of US 6,452,465 B1 to Brown et al. (hereinafter 'Brown').

Regarding claim 1, Joannopoulos teaches a system, comprising: a source resonator having a Q-factor Q1 and a characteristic size X1 (abstract, para. [0005]), coupled to a power generator (external power supply, para. [0005]), and a second resonator having a Q-factor Q2 and a characteristic size X2 (para. [0005]), coupled to a load located a distance D from the source resonator (distance between the two resonators can be larger than the characteristic size of each resonator, para. [0005]), wherein the source resonator and the second resonator are coupled to exchange energy wirelessly among the source resonator and the second resonator (abstract, para. [0004], [0013]). Joannopoulos does not teach that the square root of Q1Q2 > 100. However, Brown teaches multiple resonators that are tunable (abstract), and that filters may be fabricated with low quality factor resonators (col. 2, ln 4-6). It would have been obvious to one skilled in the art to combine the teachings of Joannopoulos with those of Brown in order to provide an inexpensive resonator structure. Neither Joannopoulos nor Brown specifically teach that the square root of Q1Q2 > 100. However, this configuration could have been determined via routine experimentation, and provided based on the specific application of the system.

Regarding claims 2 and 3, neither Joannopoulos nor Brown teaches that Q1 (or Q2 - claim 3) < 100. However, it was well known it the art at the time of the invention that resonator materials were available with low quality factors, e.g. Q1 (or Q2 - claim 3) < 100. It would have been obvious to one skilled in the art to provide Q1 (or Q2 - claim 3) < 100, in order to provide an inexpensive resonator structure.

Regarding claims 4 and 5, neither Joannopoulos nor Brown specifically teaches a third resonator having a Q-factor Q3 configured to transfer energy non-raditively with the source and second resonators, wherein the square root of Q1Q3 > 100 and the square root of Q2Q3 > 100, wherein Q3 < 100 (claim - 5). However, this configuration could have been determined via routine experimentation, and provided based on the specific application of the system.

Regarding claim 6, Joannopoulos teaches that the source resonator is coupled to the power generator with direct electrical connections (para. [0014]).

Regarding claim 7, Joannopoulos teaches that the source resonator is coupled and impedance matched to the power generator with direct electrical connections (para. [0014]).

Regarding claim 8, Brown teaches a tunable circuit wherein the source resonator is coupled to the power generator through the tunable circuit with direct electrical connections (abstract, col. 3, ln 7-12).

Regarding claim 9, Joannopoulos teaches that at least one of the direct electrical connections is configured to substantially preserve a resonant mode of the source resonator (resonant cavity, para. [0033]).

Regarding claim 10, neither Joannopoulos nor Brown specifically teaches that the source resonator has a first terminal, a second terminal, and a center terminal, and wherein an impedance between the first terminal and the center terminal and between the second terminal and the center terminal are substantially equal. However, this configuration could have been determined via routine experimentation and provided to maximize power transfer.

Regarding claim 11, Joannopoulos teaches that the source resonator includes a capacitive loaded loop having a first terminal, a second terminal, and a center terminal (para. [0019]), and wherein an impedance between the first terminal and the center terminal and between the second terminal and the center terminal are substantially equal (para. [0019]).

Regarding claim 12, neither Joannopoulos nor Brown specifically teaches that the source resonator is coupled to an impedance matching network and the impedance matching network further comprises a first terminal, a second terminal, and a center terminal, and wherein an impedance between the first terminal and the center terminal and between the second terminal and the center terminal are substantially equal. However, this configuration could have been determined via routine experimentation and provided to maximize power transfer.

---(continued in Supplemental Box)---

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

V.2 Citations and explanations:

Regarding claim 13, neither Joannopoulos nor Brown teaches that the first terminal and the second terminal are directly coupled to the power generator and driven with oscillating signals that are near 180 degrees out of phase. However, this configuration was well known in the art at the time of the invention, and could have been provided based on the specific application.

Regarding claim 14, Joannopoulos teaches that the source resonator has a resonant frequency WI and the first terminal and the second terminal are directly coupled to the power generator and driven with oscillating signals that are substantially equal to the resonant frequency omega sub 1 (para. [0023], [0025]).

Regarding claim 15, neither Joannopoulos nor Brown specifically that the center terminal is connected to an electrical ground. However, this configuration was well known in the art at the time of the invention, and could have been provided in order to provide a voltage reference point.

Regarding claim 16, neither Joannopoulos nor Brown teach that the source resonator has a resonant frequency omega sub 1 and the first terminal and the second terminal are directly coupled to the power generator and driven with a frequency substantially equal to the resonant frequency omega sub 1. However, this configuration could have been determined via routine experimentation and provided to maximize power transfer.

Regarding claim 17, Brown teaches a plurality of capacitors coupled to the power generator and the load (col., 3, ln 66-67).

Regarding claim 18, Joannopoulos that the source resonator and the second resonator are each enclosed in a low loss tangent material (para. [0023]).

Regarding claim 19, Joannopoulos teaches a power conversion circuit wherein the second resonator is coupled to the power conversion circuit to deliver DC power to the load (abstract).

Regarding claim 20, Joannopoulos teaches a power conversion circuit wherein the second resonator is coupled to the power conversion circuit to deliver AC power to the load (power, abstract, para. [0029]).

Regarding claim 21, Joannopoulos teaches a power conversion circuit, wherein the second resonator is coupled to the power conversion circuit to deliver both AC and DC power to the load (power, abstract, para. [0029]).

Regarding claim 22, Joannopoulos teaches a power conversion circuit and a plurality of loads, wherein the second resonator is coupled to the power conversion circuit (abstract), and the power conversion circuit is coupled to the plurality of loads (abstract).

Regarding claim 23, Brown teaches the system, wherein the impedance matching network comprises capacitors (col., 3, ln 66-67).

Regarding claim 24, Joannopoulos teaches that the impedance matching network comprises inductors (coils, para. [0025]).

Regarding claim 25, Brown teaches that the tunable circuit comprises variable capacitors (col., 3, ln 66-67).

Regarding claim 26, Joannopoulos teaches that the tunable circuit comprises variable inductors (para. [0025]).

Claims 1 - 26 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annex B).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, International Phase, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet or sheets containing a complete set of claims in replacement of all the claims previously filed must be submitted.

Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively in Arabic numerals (Section 205(a)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

InductEV, Inc.
Exhibit 1002
Page 502

ons concerning several claims may be grouped), whether

he claim is unchanged;

he claim is cancelled;

he claim is new;

he claim replaces one or more claims as filed;

ie claim is the result of the division of a claim as filed.

)les illustrate the manner in which amendments must be explained in the accompanying

there were 48 claims and after amendment of some claims there are 51]:
31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers;
36 unchanged; new claims 49 to 51 added."

there were 15 claims and after amendment of all claims there are 11]:
:placed by amended claims 1 to 11."

there were 14 claims and the amendments consist in cancelling some claims and in adding

1 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
ancelled; new claims 15, 16 and 17 added; all other claims unchanged."

nds of amendments are made]:
anged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended
7 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

-ticle 19(1)" (Rule 46.4)

be accompanied by a statement explaining the amendments and indicating any impact that
ht have on the description and the drawings (which cannot be amended under Article 19(1)).

published with the international application and the amended claims.

guage in which the international application is to be published.

:ceeding 500 words if in English or if translated into English.

ed with and does not replace the letter indicating the differences between the claims as filed
ust be filed on a separate sheet and must be identified as such by a heading, preferably by
ment under Article 19(1)."

y disparaging comments on the international search report or the relevance of citations
t. Reference to citations, relevant to a given claim, contained in the international search
ly in connection with an amendment of that claim.

ternational preliminary examination has already been filed

g any amendments and any accompanying statement, under Article 19, a demand for
ry examination has already been submitted, the applicant must preferably, at the time of
(and any statement) with the International Bureau, also file with the International
Authority a copy of such amendments (and of any statement) and, where required, a
endments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first
information, see the Notes to the demand form (PCT/IPEA/401).

ional preliminary examination is made, the written opinion of the International Searching
in certain cases where the International Preliminary Examining Authority did not act as
Authority and where it has notified the International Bureau under Rule 66.1*bis*(b), be
n opinion of the International Preliminary Examining Authority. If a demand is made, the
the International Preliminary Examining Authority a reply to the written opinion together,
h amendments before the expiration of 3 months from the date of mailing of Form
he expiration of 22 months from the priority date, whichever expires later (Rule 43*bis*.1(c)).

slation of the international application for entry into the national phase

n is drawn to the fact that, upon entry into the national phase, a translation of the claims as
19 may have to be furnished to the designated/elected Offices, instead of, or in addition to,
ims as filed.

the requirements of each designated/elected Office, see the *PCT Applicant's Guide*.

InductEV, Inc.
Exhibit 1002
Page 503

SEQUENCE LISTINGS AND TABLES RELATED THERETO IN INTERNATIONAL APPLICATIONS FILED IN THE U.S. RECEIVING OFFICE

The Administrative Instructions (AIs) under the Patent Cooperation Treaty (PCT), in force as of **July 1, 2009**, contain important changes relating to the manner of filing, and applicable fees for, sequence listings and/or tables related thereto (sequence-related tables) in international applications. The complete text may be accessed at http://www.wipo.int/pct/en/texts/index.htm.

Effective **July 1, 2009**, Part 8 and Annex C-*bis* will no longer form part of the AIs. Part 8 was introduced in 2001 as a temporary solution to problems arising from the filing of very large sequence listings on paper and provided for a *sequence listing forming part of the international application* to be filed in electronic form on physical medium (*e.g.*, CD), together with the remainder of the application on paper. In 2002, Part 8 was expanded to include sequence-related tables and Annex C-*bis* was added to provide technical requirements. All applicants may now file complete international applications in electronic form, eliminating the need for these temporary provisions.

I. AIS PART 8 AND ANNEX C-*BIS DELETED AS OF JULY 1, 2009*

A) **Sequence-related tables cannot be filed as a separate part of the description or in text format.** They must be provided as an integral part of the international application either:
- in PDF format as part of an international application filed in electronic form via EFS-Web; or
- on paper as part of an international application filed on paper.

B) A ***sequence listing forming part of an international application*** may be provided either:
- in electronic form, as part of an international application filed in electronic form via EFS-Web, in
  - Annex C/ST.25 text format (preferred), or
  - PDF format; or
- on paper as part of an international application filed on paper.

C) **A *sequence listing not forming part of the international application* (for search under PCT Rule 13*ter*) in Annex C/ST.25 text format**
- is not required where the *sequence listing forming part of the international application* was filed in Annex C/ST.25 text format as part of an international application filed in electronic form via EFS-Web
- is required for search where the *sequence listing forming part of the international application* was filed in PDF
- is required for search on physical medium (*e.g.*, CD) where the *sequence listing forming part of the international application* was filed on paper as part of an international application filed on paper.

II. CALCULATION OF THE INTERNATIONAL FILING FEE AND FEE REDUCTION UNDER AI § 707

A) A **sequence-related table** must form an integral part of the international application and will incur FULL page fees with no upper limit.

B) A ***sequence listing forming part of an international application*** filed:
- via EFS-Web in Annex C/ST.25 text format will incur NO page fees;
- on paper or in PDF format will incur FULL page fees with no upper limit.

III. AVAILABILITY OF SEQUENCE LISTINGS SUBMITTED FOR SEARCH UNDER PCT RULE *13TER*

International Searching Authorities will be required to transmit to the International Bureau a copy of an Annex C/ST.25 text format sequence listing provided for search under PCT Rule 13*ter*. Any such sequence listing will be made available on PATENTSCOPE® (*sequence listings forming part of the international application* are already available).

IV. JULY 2009 REQUEST (PCT/RO/101)

The Request now has two options for the last sheet: one for paper filings; and one for EFS-Web filings. The July 2009 Request may be accessed at http://www.wipo.int/pct/en/forms/index.htm

PTO/SB/08a (01-08)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number..

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known

Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	1	of	1	Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
		20110043047A1	Feb 24, 2011	Karalis, Aristeidis et al.	
		20110043048A1	Feb 24, 2011	Karalis, Aristeidis et al.	
		20110043049A1	Feb 24, 2011	Karalis, Aristeidis et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear	T[2]

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No [1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]

EXAMINER **DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1449)

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

ATTORNEY'S DOCKET NO. WTCY-0026-P01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.:	12/567,716
Filing Date:	September 25, 2009
Applicant:	Morris P. Kesler et al.
Title:	WIRELESS ENERGY TRANSFER SYSTEMS
Group Art Unit:	2828
Examiner:	KAPLAN, Hal Ira
Conf. No.:	4901

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et seq.*, the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Supplemental Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee or statement is required with the Supplemental Information Disclosure Statement. However, if an Office Action on the merits has been mailed, the Commissioner is hereby authorized to charge the required fees to Deposit Account No. 50-4262 in order to have this Supplemental Information Disclosure Statement considered.

Pursuant to 37 C.F.R. 1.98(a)(2), Applicant believes that copies of cited U.S. Patents and Published and Non-Published Applications identifiable by USPTO Serial Number are no longer required to be provided to the Office. Notification of this change to this effect was provided in the United States Patent and Trademark Office OG Notices dated October 12, 2004 and October

19, 2004. Thus, Applicant has not included copies of any US Patents or US Patent Applications identifiable by serial number that may be cited with this submission. Should the Office require copies to be provided, Applicant respectfully requests that notice of such requirement be directed to Applicant's below-signed representative. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. 1.98(a)(2).

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Respectfully submitted on March 1, 2011,

STRATEGIC PATENTS, P.C.

/John H. Nortrup, Reg. No. 59,063/
John H. Nortrup
Telephone: 207-985-2126

Customer Number 43520

Electronic Acknowledgement Receipt

EFS ID:	9558171
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	43520
Filer:	John H. Nortrop/Elizabeth Nortrup
Filer Authorized By:	John H. Nortrop
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	01-MAR-2011
Filing Date:	25-SEP-2009
Time Stamp:	12:16:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	WTCY-0026-P01_030111_IDSCommunication.pdf	89894 b2a1c70d520f4ccaefc44e809f29e69230bdb1af	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Filed (SB/08)	WTCY-0026-P01_030111_Form1449.pdf	126781 b4bd0478296b4bb651714c830c8d7fe234be7207	no	1

Warnings:	
Information:	
This is not an USPTO supplied IDS fillable form	
Total Files Size (in bytes):	216675

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12/567,716
	Filing Date	Sep 25, 2009
	First Named Inventor	Morris P. Kesler
	Art Unit	2828
	Examiner Name	KAPLAN, Hal Ira
Sheet 3 of 3	**Attorney Docket No.**	WTCY-0026-P01

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/John H. Nortrup/	Date (YYYY-MM-DD)	2011-05-05
Name/Print	John H.Nortrup	Registration Number	59,063

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12/567,716
	Filing Date	Sep 25, 2009
	First Named Inventor	Morris P. Kesler
	Art Unit	2828
	Examiner Name	KAPLAN, Hal Ira
Sheet 1 of 3	**Attorney Docket No.**	WTCY-0026-P01

U.S. PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

U.S. PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2011/0043046	A8	Feb 24, 2011	Joannopoulos, John D., et al.	
		US-2010/0225272	A8	Sep 9, 2010	Kirby, Miles A., et al.	
		US-2009/0067198	A8	Mar 12, 2009	Graham, David J.	

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Cnty Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T[5]
		WO-2010/093997			Aug 19, 2010	Kurs, Andre B., et al.		
		WO-2010/039967			Apr 8, 2010	Hamam, Rafif E., et al.		
		WO-2010/030977			Mar 18, 2010	Lin, Jenshan et al.		
		WO-2009/149464			Dec 10, 2009	Low, Zhen N., et al.		
		WO-2009/140506			Nov 19, 2009	Karalis, Aristeidis et al.		
		WO-2007/008646_A2			Jan 18, 2007	Joannopoulos, John D., et al.		
		WO-92/17929			Oct 15, 1992	Boys, John T., et al.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12/567,716
	Filing Date	Sep 25, 2009
	First Named Inventor	Morris P. Kesler
	Art Unit	2828
	Examiner Name	KAPLAN, Hal Ira
Sheet 2 of 3	**Attorney Docket No.**	WTCY-0026-P01

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	NPL-36	"ISR and WO for Int'l Appl. No. PCT/US2009/58499", PCT/US09/58499 12/10/2009 , all	
	NPL-33	"International Search Report & WO for PCT/US09/43970", PCT/US09/43970 07/14/2009 , all	
	NPL-108	"Application Serial No. 12/613,686 (Atty Ref WTCY-0026-P02), Notice of Allowance mailed 03/07/2011", SN12/613,686 , 27	

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.
[4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
MARC M. WEFERS
FISH & RICHARDSON P.C.
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 14 JUL 2009
Applicant's or agent's file reference 019970364WO1	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US 09/43970	International filing date *(day/month/year)* 14 May 2009 (14.05.2009)
Applicant MASSACHUSETTS INSTITUTE OF TECHNOLOGY	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 8270

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 019970364WO1	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US 09/43970	International filing date *(day/month/year)* 14 May 2009 (14.05.2009)	(Earliest) Priority Date *(day/month/year)* 14 May 2008 (14.05.2008)
Applicant MASSACHUSETTS INSTITUTE OF TECHNOLOGY		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 9 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out 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)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (April 2007)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 09/43970

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H01P 7/00 (2009.01)
USPC - 333/219
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - H01P 7/00 (2009.01)
USPC - 333/219

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 333/219, 230

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (PGPB,USPT,EPAB,JPAB); Google Patents; Google Scholar
Search Terms Used: resonance, resonator, energy, electricity, power, transfer, wireless, frequency, wavelength, angular, width, quality, factor, far, field, interference, generator, source, driving, drive

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2007/0222542 A1 (JOANNOPOULOS et al.) 27 September 2007 (27.09.2007), para [0005], [0006], [0012], [0015], [0016], [0019], [0021], [0022], [0024], [0027], [0028], [0029], [0031], [0035], [0042]	1-8 --- 9-63
Y	US 2004/0113847 A1 (QI et al.) 17 June 2004 (17.06.2004), para [0015], [0023]	9-63
Y	US 5,437,057 A (RICHLEY et al.) 25 July 1995 (25.07.1995), col 9, ln 6-18	15-25, 37-47, 57, 58, 61, 62

☐ Further documents are listed in the continuation of Box C. ☐

* 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 application or patent 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

Date of the actual completion of the international search	Date of mailing of the international search report
07 July 2009 (07.07.2009)	14 JUL 2009
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
MARC M. WEFERS
FISH & RICHARDSON P.C.
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	14 JUL 2009
Applicant's or agent's file reference 019970364WO1	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 09/43970	14 May 2009 (14.05.2009)	14 May 2008 (14.05.2008)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H01P 7/00 (2009.01)
USPC - 333/219

Applicant MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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 43*bis*.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 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	07 July 2009 (07.07.2009)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2007)

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. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing

      ☐ contained in the international application as filed

      ☐ filed together with the international application in electronic form

      ☐ furnished 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 and/or table(s) relating thereto 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 INTERNATIONAL SEARCHING AUTHORITY

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Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1 - 63	YES
	Claims	None.	NO
Inventive step (IS)	Claims	None.	YES
	Claims	1 - 63	NO
Industrial applicability (IA)	Claims	1 - 63	YES
	Claims	None.	NO

2. Citations and explanations:

Claims 1-8 lack an inventive step under PCT Article 33(3) as being obvious over US 2007/0222542 A1 to Joannopoulos et al. (hereinafter 'Joannopoulos').

Regarding claim 1, Joannopoulos discloses an apparatus for use in wireless energy transfer, the apparatus comprising: a first resonator structure configured for energy transfer with a second resonator structure, over a distance D larger than a characteristic size L1 of said first resonator structure and larger than a characteristic size L2 of said second resonator structure (para [0005]), wherein the energy transfer has a rate kappa and is mediated by evanescent-tail coupling of a resonant field of the first resonator structure and a resonant field of the second resonator structure (para [0006]), wherein said resonant field of the first resonator structure has a resonance angular frequency omega1 (para [0015]), a resonance frequency-width gamma1 (para [0015]), and a resonance quality factor Q1 = omega1/2gamma1 at least larger than 300 (para [0027]), and said resonant field of the first resonator structure has a resonance angular frequency omega2 (para [0015]), a resonance frequency-width gamma2 (para [0015]), and a resonance quality factor Q2 = omega2/2gamma2 at least larger than 300 (para [0027]), wherein the absolute value of the difference of said angular frequencies omega1 and omega2 is smaller than the broader of said resonant widths gamma1 and gamma2 (para [0016]), and further comprising a power supply coupled to the first structure and configured to drive the first resonator structure or the second resonator structure at an angular frequency away from the resonance angular frequencies and shifted towards a frequency corresponding to an odd normal mode for the resonator structures (para [0024]) to reduce radiation from the resonator structures by destructive far-field interference (para [0029]). Joannopoulos does not specifically disclose wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20. However, it does disclose wherein the quantity kappa is much greater than the quantity sqrt(gamma1gamma2) (para [0028]). It would have been obvious to one of ordinary skill in the art to provide wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20 based on experiment and design to give the quantities their optimum values (para [0028]).

Regarding claim 2, Joannopoulos discloses the apparatus of claim 1, wherein the power supply is configured to drive the first resonator structure or the second resonator structure at the angular frequency away from the resonance angular frequencies and shifted towards the frequency corresponding to an odd normal mode for the resonator structures (para [0024]) to substantially suppress radiation from the resonator structures by destructive far-field interference (para [0029]).

Regarding claim 3, Joannopoulos discloses a method for wireless energy transfer involving a first resonator structure configured for energy transfer with a second resonator structure, over a distance D larger than a characteristic size L1 of said first resonator structure and larger than a characteristic size L2 of said second resonator structure (para [0005]), wherein the energy transfer has a rate kappa and is mediated by evanescent-tail coupling of a resonant field of the first resonator structure and a resonant field of the second resonator structure (para [0006]), wherein said resonant field of the first resonator structure has a resonance angular frequency omega1 (para [0015]), a resonance frequency-width gamma1 (para [0015]), and a resonance quality factor Q1 = omega1/2gamma1 at least larger than 300 (para [0027]), and said resonant field of the first resonator structure has a resonance angular frequency omega2 (para [0015]), a resonance frequency-width gamma2 (para [0015]), and a resonance quality factor Q2 = omega2/2gamma2 at least larger than 300 (para [0027]), wherein the absolute value of the difference of said angular frequencies omega1 and omega2 is smaller than the broader of said resonant widths gamma1 and gamma2 (para [0016]), the method comprising: driving the first resonator structure or the second resonator structure at an angular frequency away from the resonance angular frequencies and shifted towards a frequency corresponding to an odd normal mode for the resonator structures (para [0024]) to reduce radiation from the resonator structures by destructive far-field interference (para [0029]). Joannopoulos does not specifically disclose wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20. However, it does disclose wherein the quantity kappa is much greater than the quantity sqrt(gamma1gamma2) (para [0028]). It would have been obvious to one of ordinary skill in the art to provide wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20 based on experiment and design to give the quantities their optimum values (para [0028]).

Regarding claim 4, Joannopoulos discloses the method of claim 3, wherein the first resonator structure or the second resonator structure is driven at the angular frequency away from the resonance angular frequencies and shifted towards the frequency corresponding to an odd normal mode for the resonator structures (para [0024]) to substantially suppress radiation from the resonator structures by destructive far-field interference (para [0029]).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Box V.2. Citations and explanations:

Regarding claim 5, Joannopoulos discloses an apparatus for use in wireless energy transfer, the apparatus comprising: a first resonator structure configured for energy transfer with a second resonator structure, over a distance D larger than a characteristic size L1 of said first resonator structure and larger than a characteristic size L2 of said second resonator structure (para [0005]), wherein the energy transfer has a rate kappa and is mediated by evanescent-tail coupling of a resonant field of the first resonator structure and a resonant field of the second resonator structure (para [0006]), wherein said resonant field of the first resonator structure has a resonance angular frequency omega1 (para [0015]), a resonance frequency-width gamma1 (para [0015]), and a resonance quality factor Q1 = omega1/2gamma1 at least larger than 300 (para [0027]), and said resonant field of the first resonator structure has a resonance angular frequency omega2 (para [0015]), a resonance frequency-width gamma2 (para [0015]), and a resonance quality factor Q2 = omega2/2gamma2 at least larger than 300 (para [0027]), wherein the absolute value of the difference of said angular frequencies omega1 and omega2 is smaller than the broader of said resonant widths gamma1 and gamma2 (para [0016]), wherein for a desired range of the distances D, the resonance angular frequencies for the resonator structures increase transmission efficiency T by accounting for radiative interference, wherein the increase is relative to a transmission efficiency T calculated without accounting for the radiative interference (para [0042]). Joannopoulos does not specifically disclose wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20. However, it does disclose wherein the quantity kappa is much greater than the quantity sqrt(gamma1gamma2) (para [0028]). It would have been obvious to one of ordinary skill in the art to provide wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20 based on experiment and design to give the quantities their optimum values (para [0028]). Joannopoulos does not specifically disclose wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20. However, it does disclose wherein the quantity kappa is much greater than the quantity sqrt(gamma1gamma2) (para [0028]). It would have been obvious to one of ordinary skill in the art to provide wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20 based on experiment and design to give the quantities their optimum values (para [0028]).

Regarding claim 6, Joannopoulos discloses the apparatus of claim 5, wherein the resonance angular frequencies for the resonator structures are selected by optimizing the transmission efficiency T to account for both a resonance quality factor U and an interference factor V (para [0035]).

Regarding claim 7, Joannopoulos discloses a method for designing a wireless energy transfer apparatus, the apparatus including a first resonator structure configured for energy transfer with a second resonator structure, over a distance D larger than a characteristic size L1 of said first resonator structure and larger than a characteristic size L2 of said second resonator structure (para [0005]), wherein the energy transfer has a rate kappa and is mediated by evanescent-tail coupling of a resonant field of the first resonator structure and a resonant field of the second resonator structure (para [0006]), wherein said resonant field of the first resonator structure has a resonance angular frequency omega1 (para [0015]), a resonance frequency-width gamma1 (para [0015]), and a resonance quality factor Q1 = omega1/2gamma1 at least larger than 300 (para [0027]), and said resonant field of the first resonator structure has a resonance angular frequency omega2 (para [0015]), a resonance frequency-width gamma2 (para [0015]), and a resonance quality factor Q2 = omega2/2gamma2 at least larger than 300 (para [0027]), wherein the absolute value of the difference of said angular frequencies omega1 and omega2 is smaller than the broader of said resonant widths gamma1 and gamma2 (para [0016]), the method comprising: selecting the resonance angular frequencies for the resonator structures to substantially optimize the transmission efficiency by accounting for radiative interference between the resonator structures (para [0042]). Joannopoulos does not specifically disclose wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20. However, it does disclose wherein the quantity kappa is much greater than the quantity sqrt(gamma1gamma2) (para [0028]). It would have been obvious to one of ordinary skill in the art to provide wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20 based on experiment and design to give the quantities their optimum values (para [0028]). Joannopoulos does not specifically disclose wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20. However, it does disclose wherein the quantity kappa is much greater than the quantity sqrt(gamma1gamma2) (para [0028]). It would have been obvious to one of ordinary skill in the art to provide wherein the quantity kappa/sqrt(gamma1gamma2) is at least larger than 20 based on experiment and design to give the quantities their optimum values (para [0028]).

Regarding claim 8, Joannopoulos discloses the method of claim 7, wherein the resonance angular frequencies for the resonator structures are selected by optimizing the transmission efficiency T to account for both a resonance quality factor U and an interference factor V (para [0035]).

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Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

Box V.2. Citations and explanations:

Claims 9-14, 26-36, 48-56, 59, 60 and 63 lack an inventive step under PCT Article 33(3) as being obvious over Joannopoulos, in view of US 2004/0113847 A1 to Qi et al. (hereinafter 'Qi').

Regarding claim 9, Joannopoulos discloses an apparatus for use in wireless energy transfer, the apparatus comprising: a first resonator structure configured for energy transfer with a second resonator structure over a distance D (para [0005]), wherein the energy transfer is mediated by evanescent-tail coupling of a resonant field of the first resonator structure and a resonant field of the second resonator structure, with a coupling factor k (para [0006]), wherein said resonant field of the first resonator structure has a resonance angular frequency omega1 (para [0015]), a resonance frequency-width gamma1 (para [0015]), and a resonance quality factor Q1 = omega1/2gamma1 (para [0027]), with an associated radiation quality factor Q1,rad >= Q1 (para [0022]), said resonant field of the second resonator structure has a resonance angular frequency omega2 (para [0015]), a resonance frequency-width gamma2 (para [0015]), and a resonance quality factor Q2 = omega2/2gamma2 (para [0027]), with an associated radiation quality factor Q2,rad >= Q2 (para [0022]), wherein an absolute value of a difference of said angular frequencies omega1 and omega2 is smaller than broader of said resonant widths gamma1 and gamma2 (para [0016]), and an average resonant angular frequency is defined as omegao = sqrt(omega1omega2) (para [0024]), corresponding to an average resonant wavelength lambdao = 2pic/omegao, where c is the speed of light in free space (para [0026]), and a strong-coupling factor being defined as U = ksqrt(Q1Q2) (para [0028]). Joannopoulos does not specifically disclose wherein said resonant field of the first resonator structure is radiative in the far field, wherein said resonant field of the second resonator structure is radiative in the far field, and wherein the apparatus is configured to employ interference between said radiative far fields of the resonant fields of the first and second resonator, with an interference factor Vrad, to reduce a total amount of radiation from the apparatus compared to an amount of radiation from the apparatus in the absence of interference, a strong-interference factor being defined as V = Vradsqrt((Q1/Q1,rad)(Q2/Q2,rad)). However, Qi does disclose wherein said resonant field of the first resonator structure is radiative in the far field (para [0015]), wherein said resonant field of the second resonator structure is radiative in the far field (para [0015]), and wherein the apparatus is configured to employ interference between said radiative far fields of the resonant fields of the first and second resonator (para [0015]), with an interference factor Vrad, to reduce a total amount of radiation from the apparatus compared to an amount of radiation from the apparatus in the absence of interference (para [0023]), a strong-interference factor being defined as V = Vradsqrt((Q1/Q1,rad)(Q2/Q2,rad)) (para [0015]). It would have been obvious to one of ordinary skill in the art to combine the apparatus of Joannopoulos with the element of Qi because Qi discloses that its element addresses an ongoing need in the art for improving operating characteristics (Qi para [0015]).

Regarding claim 10, the combination of Joannopoulos and Qi discloses the apparatus of claim 9, and Joannopoulos further discloses wherein Q1/Q1,rad >= 0.01 and Q2/Q2,rad >= 0.01 (para [0027]).

Regarding claim 11, the combination of Joannopoulos and Qi discloses the apparatus of claim 9, and Joannopoulos further discloses wherein Q1/Q1,rad >= 0.1 and Q2/Q2,rad >= 0.1 (para [0027]).

Regarding claim 12, the combination of Joannopoulos and Qi discloses the apparatus of claim 9, and Joannopoulos further discloses wherein D/lambdao is larger than 0.001 (para [0024]) and the strong-interference factor V is larger than 0.01 (para [0027]).

Regarding claim 13, the combination of Joannopoulos and Qi discloses the apparatus of claim 9, and Joannopoulos further discloses wherein D/lambdao is larger than 0.001 (para [0024]) and the strong-interference factor V is larger than 0.1 (para [0027]).

Regarding claim 14, the combination of Joannopoulos and Qi discloses the apparatus of claim 9, and Joannopoulos further discloses the second resonator structure (para [0005]).

Regarding claim 26, the combination of Joannopoulos and Qi discloses the apparatus of claim 9, and Joannopoulos further discloses wherein at least one of the first and second resonator structures comprises a capacitively loaded loop of a conducting wire (para [0019]).

Regarding claim 27, the combination of Joannopoulos and Qi discloses the apparatus of claim 26, and Joannopoulos further discloses where the characteristic size of said loop is less than 30 cm and the width of said conducting wire is less than 2 cm (para [0027]).

Regarding claim 28, the combination of Joannopoulos and Qi discloses the apparatus of claim 26, and Joannopoulos further discloses where the characteristic size of said loop is less than 1 m and the width of said conducting wire is less than 2 cm (para [0027]).

Regarding claim 29, the combination of Joannopoulos and Qi discloses the apparatus of claim 9, and Joannopoulos further discloses a feedback mechanism for maintaining the resonant frequency of one or more of the resonant objects (para [0031]).

Regarding claim 30, the combination of Joannopoulos and Qi discloses the apparatus of claim 29, and Joannopoulos further discloses wherein the feedback mechanism comprises an oscillator with a fixed driving frequency and is configured to adjust the resonant frequency of the one or more resonant objects to be detuned by a fixed amount with respect to the fixed frequency (para [0031]).

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Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
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Box V.2. Citations and explanations:

Regarding claim 31, Joannopoulos discloses an apparatus for use in wireless energy transfer, the apparatus comprising: a first resonator structure configured for energy transfer with a second resonator structure over a distance D (para [0005]), wherein the energy transfer is mediated by evanescent-tail coupling of a resonant field of the first resonator structure and a resonant field of the second resonator structure, with a coupling factor k (para [0006]), wherein said resonant field of the first resonator structure has a resonance angular frequency omega1 (para [0015]), a resonance frequency-width gamma1 (para [0015]), and a resonance quality factor Q1 = omega1/2gamma1 (para [0027]), with an associated radiation quality factor Q1,rad >= Q1 (para [0022]), said resonant field of the second resonator structure has a resonance angular frequency omega2 (para [0015]), a resonance frequency-width gamma2 (para [0015]), and a resonance quality factor Q2 = omega2/2gamma2 (para [0027]), with an associated radiation quality factor Q2,rad >= Q2 (para [0022]), wherein an absolute value of a difference of said angular frequencies omega1 and omega2 is smaller than broader of said resonant widths gamma1 and gamma2 (para [0016]), and an average resonant angular frequency is defined as omegao = sqrt(omega1omega2) (para [0024]), corresponding to an average resonant wavelength lambdao = 2pic/omegao, where c is the speed of light in free space (para [0026]), and a strong-coupling factor being defined as U = ksqrt(Q1Q2) (para [0028]). Joannopoulos does not specifically disclose wherein said resonant field of the first resonator structure is radiative in the far field, wherein said resonant field of the second resonator structure is radiative in the far field, and wherein the apparatus is configured to employ interference between said radiative far fields of the resonant fields of the first and second resonator, with an interference factor Vrad, to reduce a total amount of radiation from the apparatus compared to an amount of radiation from the apparatus in the absence of interference, a strong-interference factor being defined as V = Vradsqrt((Q1/Q1,rad)(Q2/Q2,rad)). However, Qi does disclose wherein said resonant field of the first resonator structure is radiative in the far field (para [0015]), wherein said resonant field of the second resonator structure is radiative in the far field (para [0015]), and wherein the apparatus is configured to employ interference between said radiative far fields of the resonant fields of the first and second resonator (para [0015]), with an interference factor Vrad, to reduce a total amount of radiation from the apparatus compared to an amount of radiation from the apparatus in the absence of interference (para [0023]), a strong-interference factor being defined as V = Vradsqrt((Q1/Q1,rad)(Q2/Q2,rad)) (para [0015]). It would have been obvious to one of ordinary skill in the art to combine the apparatus of Joannopoulos with the element of Qi because Qi discloses that its element addresses an ongoing need in the art for improving operating characteristics (Qi para [0015]).

Regarding claim 32, the combination of Joannopoulos and Qi discloses the apparatus of claim 31, and Joannopoulos further discloses wherein Q1/Q1,rad >= 0.05 and Q2/Q2,rad >= 0.05 (para [0027]).

Regarding claim 33, the combination of Joannopoulos and Qi discloses the apparatus of claim 31, and Joannopoulos further discloses wherein Q1/Q1,rad >= 0.5 and Q2/Q2,rad >= 0.5 (para [0027]).

Regarding claim 34, the combination of Joannopoulos and Qi discloses the apparatus of claim 31, and Joannopoulos further discloses wherein D/lambdao is larger than 0.01 (para [0024]) and the strong-interference factor V is larger than 0.05 (para [0027]).

Regarding claim 35, the combination of Joannopoulos and Qi discloses the apparatus of claim 31, and Joannopoulos further discloses wherein D/lambdao is larger than 0.01 (para [0024]) and the strong-interference factor V is larger than 0.5 (para [0027]).

Regarding claim 36, the combination of Joannopoulos and Qi discloses the apparatus of claim 31, and Joannopoulos further discloses the second resonator structure (para [0005]).

Regarding claim 48, the combination of Joannopoulos and Qi discloses the apparatus of claim 31, and Joannopoulos further discloses wherein at least one of the first and second resonator structures comprises a capacitively loaded loop of a conducting wire (para [0019]).

Regarding claim 49, the combination of Joannopoulos and Qi discloses the apparatus of claim 48, and Joannopoulos further discloses where the characteristic size of said loop is less than 30 cm and the width of said conducting wire is less than 2 cm (para [0027]).

Regarding claim 50, the combination of Joannopoulos and Qi discloses the apparatus of claim 48, and Joannopoulos further discloses where the characteristic size of said loop is less than 1 m and the width of said conducting wire is less than 2 cm (para [0027]).

Regarding claim 51, the combination of Joannopoulos and Qi discloses the apparatus of claim 31, and Joannopoulos further discloses a feedback mechanism for maintaining the resonant frequency of one or more of the resonant objects (para [0031]).

Regarding claim 52, the combination of Joannopoulos and Qi discloses the apparatus of claim 51, and Joannopoulos further discloses wherein the feedback mechanism comprises an oscillator with a fixed driving frequency and is configured to adjust the resonant frequency of the one or more resonant objects to be detuned by a fixed amount with respect to the fixed frequency (para [0031]).

Regarding claim 53, the combination of Joannopoulos and Qi discloses the apparatus of claim 51, and Joannopoulos further discloses where the feedback mechanism is configured to monitor an efficiency of the energy transfer, and adjust the resonant frequency of the one or more resonant objects to maximize the efficiency (para [0031]).

Regarding claim 54, the combination of Joannopoulos and Qi discloses the apparatus of claim 31, and Joannopoulos further discloses wherein the resonance angular frequencies for the resonator structures are selected to optimize the energy-transfer efficiency by accounting for both the strong-coupling factor U and the strong-interference interference factor V (para [0016]).

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Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
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Box V.2. Citations and explanations:

Regarding claim 55, the combination of Joannopoulos and Qi discloses a method for wireless energy transfer, the method comprising: providing a first resonator structure configured for energy transfer with a second resonator structure over a distance D (para [0005]), wherein the energy transfer is mediated by evanescent-tail coupling of a resonant field of the first resonator structure and a resonant field of the second resonator structure, with a coupling factor k (para [0006]), wherein said resonant field of the first resonator structure has a resonance angular frequency omega1 (para [0015]), a resonance frequency-width gamma1 (para [0015]), and a resonance quality factor Q1 = omega1/2gamma1 (para [0027]), with an associated radiation quality factor Q1,rad >= Q1 (para [0022]), said resonant field of the second resonator structure has a resonance angular frequency omega2 (para [0015]), a resonance frequency-width gamma2 (para [0015]), and a resonance quality factor Q2 = omega2/2gamma2 (para [0027]), with an associated radiation quality factor Q2,rad >= Q2 (para [0022]), wherein an absolute value of a difference of said angular frequencies omega1 and omega2 is smaller than broader of said resonant widths gamma1 and gamma2 (para [0016]), and an average resonant angular frequency is defined as omegao = sqrt(omega1omega2) (para [0024]), corresponding to an average resonant wavelength lambdao = 2pic/omegao, where c is the speed of light in free space (para [0026]), and a strong-coupling factor being defined as U = ksqrt(Q1Q2) (para [0028]). Joannopoulos does not specifically disclose wherein said resonant field of the first resonator structure is radiative in the far field, wherein said resonant field of the second resonator structure is radiative in the far field, and employing interference between said radiative far fields of the resonant fields of the first and second resonator, with an interference factor Vrad, to reduce a total amount of radiation from the apparatus compared to an amount of radiation from the apparatus in the absence of interference, a strong-interference factor being defined as V = Vradsqrt((Q1/Q1,rad)(Q2/Q2,rad)). However, Qi does disclose wherein said resonant field of the first resonator structure is radiative in the far field (para [0015]), wherein said resonant field of the second resonator structure is radiative in the far field (para [0015]), and employing interference between said radiative far fields of the resonant fields of the first and second resonator (para [0015]), with an interference factor Vrad, to reduce a total amount of radiation from the apparatus compared to an amount of radiation from the apparatus in the absence of interference (para [0023]), a strong-interference factor being defined as V = Vradsqrt((Q1/Q1,rad)(Q2/Q2,rad)) (para [0015]). It would have been obvious to one of ordinary skill in the art to combine the method of Joannopoulos with the element of Qi because Qi discloses that its element addresses an ongoing need in the art for improving operating characteristics (Qi para [0015]).

Regarding claim 56, the combination of Joannopoulos and Qi discloses the method of claim 55, and Joannopoulos further discloses wherein Q1/Q1,rad >= 0.01 and Q2/Q2,rad >= 0.01 (para [0027]).

Regarding claim 59, the combination of Joannopoulos and Qi discloses a method for wireless energy transfer, the method comprising: providing a first resonator structure configured for energy transfer with a second resonator structure over a distance D (para [0005]), wherein the energy transfer is mediated by evanescent-tail coupling of a resonant field of the first resonator structure and a resonant field of the second resonator structure, with a coupling factor k (para [0006]), wherein said resonant field of the first resonator structure has a resonance angular frequency omega1 (para [0015]), a resonance frequency-width gamma1 (para [0015]), and a resonance quality factor Q1 = omega1/2gamma1 (para [0027]), with an associated radiation quality factor Q1,rad >= Q1 (para [0022]), said resonant field of the second resonator structure has a resonance angular frequency omega2 (para [0015]), a resonance frequency-width gamma2 (para [0015]), and a resonance quality factor Q2 = omega2/2gamma2 (para [0027]), with an associated radiation quality factor Q2,rad >= Q2 (para [0022]), wherein an absolute value of a difference of said angular frequencies omega1 and omega2 is smaller than broader of said resonant widths gamma1 and gamma2 (para [0016]), and an average resonant angular frequency is defined as omegao = sqrt(omega1omega2) (para [0024]), corresponding to an average resonant wavelength lambdao = 2pic/omegao, where c is the speed of light in free space (para [0026]), and a strong-coupling factor being defined as U = ksqrt(Q1Q2) (para [0028]). Joannopoulos does not specifically disclose wherein said resonant field of the first resonator structure is radiative in the far field, wherein said resonant field of the second resonator structure is radiative in the far field, and employing interference between said radiative far fields of the resonant fields of the first and second resonator, with an interference factor Vrad, to reduce a total amount of radiation from the apparatus compared to an amount of radiation from the apparatus in the absence of interference, a strong-interference factor being defined as V = Vradsqrt((Q1/Q1,rad)(Q2/Q2,rad)). However, Qi does disclose wherein said resonant field of the first resonator structure is radiative in the far field (para [0015]), wherein said resonant field of the second resonator structure is radiative in the far field (para [0015]), and employing interference between said radiative far fields of the resonant fields of the first and second resonator (para [0015]), with an interference factor Vrad, to reduce a total amount of radiation from the apparatus compared to an amount of radiation from the apparatus in the absence of interference (para [0023]), a strong-interference factor being defined as V = Vradsqrt((Q1/Q1,rad)(Q2/Q2,rad)) (para [0015]). It would have been obvious to one of ordinary skill in the art to combine the method of Joannopoulos with the element of Qi because Qi discloses that its element addresses an ongoing need in the art for improving operating characteristics (Qi para [0015]).

Regarding claim 60, the combination of Joannopoulos and Qi discloses the method of claim 59, and Joannopoulos further discloses wherein Q1/Q1,rad >= 0.01 and Q2/Q2,rad >= 0.05 (para [0027]).

Regarding claim 63, the combination of Joannopoulos and Qi discloses the method of claim 59, and Joannopoulos further discloses wherein the resonance angular frequencies for the resonator structures are selected to optimize the energy-transfer efficiency by accounting for both the strong-coupling factor U and the strong-interference interference factor V (para [0016]).

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Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
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Box V.2. Citations and explanations:

Claims 15-25, 37-47, 57, 58, 61 and 62 lack an inventive step under PCT Article 33(3) as being obvious over Joannopoulos in view of Qi and in further view of US 5,437,057 A to Richley et al. (hereinafter 'Richley').

Regarding claim 15, the combination of Joannopoulos and Qi discloses the apparatus of claim 9, and Joannopoulos further discloses wherein, during operation, a power generator is coupled to one of the first and second resonant structure (para [0005]), with a coupling rate kappag (para [0006]), wherein Ug is defined as kappag/gamma1, if the power generator is coupled to the first resonator structure and defined as kappag/gamma2 if the power generator is coupled to the second resonator structure (para [0024]). Neither specifically discloses wherein a power generator is configured to drive the resonator structure, to which it is coupled, at a driving frequency f, corresponding to a driving angular frequency omega = 2pif. However, Richley does disclose wherein a power generator is configured to drive the resonator structure, to which it is coupled, at a driving frequency f, corresponding to a driving angular frequency omega = 2pif (col 9, ln 6-18). It would have been obvious to one of ordinary skill in the art to combine the apparatus of Joannopoulos and Qi with the element of Richley because Richley teaches that its element addresses an ongoing need in the art for driving the resonators (Richley col 9, ln 6-18).

Regarding claim 16, the combination of Joannopoulos, Qi and Richely discloses the apparatus of claim 15, and Joannopoulos further discloses wherein the driving frequency is different from the resonance frequencies of the first and second resonator structures and is closer to a frequency corresponding to an odd normal mode of the system of the two resonator structures (para [0024]), wherein the detuning of the first resonator from the driving frequency is defined as D1 = (omega - omega1)/gamma1 and the detuning of the second resonator structure from the driving frequency is defined as D2 = (omega - omega2)/gamma2 (para [0024]).

Regarding claim 17, the combination of Joannopoulos, Qi and Richely discloses the apparatus of claim 16, and Qi further discloses wherein D1 is approximately equal to UVrad and D2 is approximately equal to UVrad (para [0015]).

Regarding claim 18, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 15, and Joannopoulos further discloses wherein Ug is chosen to maximize the ratio of the energy-transfer efficiency to the radiation efficiency (para [0012]).

Regarding claim 19, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 17, and Joannopoulos further discloses wherein Ug is approximately equal to sqrt(1 + U^2 - Vrad^2 U^2 + V^2 - 2VVrad) (para [0028]).

Regarding claim 20, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 17, and Joannopoulos further discloses wherein f is at least larger than 100 kHz and smaller than 500MH (para [0027]).

Regarding claim 21, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 17, and Joannopoulos further discloses wherein f is at least larger than 1MHz and smaller than 50MHz (para [0027]).

Regarding claim 22, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 15, and Joannopoulos further discloses the power generator (para [0005]).

Regarding claim 23, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 15, and Joannopoulos further discloses wherein, during operation, a power load is coupled to the resonant structure to which the power generator is not coupled, with a coupling rate kappa1 (para [0021]), and is configured to receive from the resonator structure, to which it is coupled, a usable power (para [0005]), wherein U1 is defined as kappa1/gamma1, if the power load is coupled to the first resonator structure and defined as kappa1/gamma2 if the power load is coupled to the second resonator structure (para [0024]).

Regarding claim 24, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 23, and Joannopoulos further discloses wherein U1 is chosen to maximize the ratio of the energy-transfer efficiency to the radiation efficiency (para [0012]).

Regarding claim 25, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 24, and Joannopoulos further discloses wherein the driving frequency is different from the resonance frequencies of the first and second resonator structures and is closer to a frequency corresponding to an odd normal mode of the system of the two resonator structures (para [0024]), wherein the detuning of the first resonator from the driving frequency is defined as D1 = (omega - omega1)/gamma1 and is approximately equal to UVrad and the detuning of the second resonator structure from the driving frequency is defined as D2 = (omega - omega2)/gamma2 and is approximately equal to UVrad (para [0024]), wherein U1 is approximately equal to sqrt(1 + U^2 - Vrad^2 U^2 + V^2 - 2VVrad) (para [0028]).

Regarding claim 37, the combination of Joannopoulos and Qi discloses the apparatus of claim 31, and Joannopoulos further discloses wherein, during operation, a power generator is coupled to one of the first and second resonant structure (para [0005]), with a coupling rate kappag (para [0006]), wherein Ug is defined as kappag/gamma1, if the power generator is coupled to the first resonator structure and defined as kappag/gamma2 if the power generator is coupled to the second resonator structure (para [0024]). Neither specifically discloses wherein a power generator is configured to drive the resonator structure, to which it is coupled, at a driving frequency f, corresponding to a driving angular frequency omega = 2pif. However, Richley does disclose wherein a power generator is configured to drive the resonator structure, to which it is coupled, at a driving frequency f, corresponding to a driving angular frequency omega = 2pif (col 9, ln 6-18). It would have been obvious to one of ordinary skill in the art to combine the apparatus of Joannopoulos and Qi with the element of Richley because Richley teaches that its element addresses an ongoing need in the art for driving the resonators (Richley col 9, ln 6-18).

-Please see continuation sheet-

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/43970

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
Box V.2. Citations and explanations:

Regarding claim 38, the combination of Joannopoulos, Qi and Richely discloses the apparatus of claim 37, and Joannopoulos further discloses wherein the driving frequency is different from the resonance frequencies of the first and second resonator structures and is closer to a frequency corresponding to an odd normal mode of the system of the two resonator structures (para [0024]), wherein the detuning of the first resonator from the driving frequency is defined as D1 = (omega - omega1)/gamma1 and the detuning of the second resonator structure from the driving frequency is defined as D2 = (omega - omega2)/gamma2 (para [0024]).

Regarding claim 39, the combination of Joannopoulos, Qi and Richely discloses the apparatus of claim 38, and Qi further discloses wherein D1 is approximately equal to UV and D2 is approximately equal to UV (para [0015]).

Regarding claim 40, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 37, and Joannopoulos further discloses wherein Ug is chosen to maximize the ratio of the energy-transfer efficiency to the radiation efficiency (para [0012]).

Regarding claim 41, the combination of Joannopoulos, Qi and Richely discloses the apparatus of claim 39, and Joannopoulos further discloses wherein Ug is approximately equal to sqrt((1 + U^2)(1 - V^2)) (para [0028]).

Regarding claim 42, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 37, and Joannopoulos further discloses wherein f is at least larger than 100 kHz and smaller than 500MH (para [0027]).

Regarding claim 43, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 37, and Joannopoulos further discloses wherein f is at least larger than 1MHz and smaller than 50MHz (para [0027]).

Regarding claim 44, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 37, and Joannopoulos further discloses the power generator (para [0005]).

Regarding claim 45, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 37, and Joannopoulos further discloses wherein, during operation, a power load is coupled to the resonant structure to which the power generator is not coupled, with a coupling rate kappa1 (para [0021]), and is configured to receive from the resonator structure, to which it is coupled, a usable power (para [0005]), wherein U1 is defined as kappa1/gamma1, if the power load is coupled to the first resonator structure and defined as kappa1/gamma2 if the power load is coupled to the second resonator structure (para [0024]).

Regarding claim 46, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 45, and Joannopoulos further discloses wherein U1 is chosen to maximize the ratio of the energy-transfer efficiency to the radiation efficiency (para [0012]).

Regarding claim 47, the combination of Joannopoulos, Qi and Richley discloses the apparatus of claim 46, and Joannopoulos further discloses wherein the driving frequency is different from the resonance frequencies of the first and second resonator structures and is closer to a frequency corresponding to an odd normal mode of the system of the two resonator structures (para [0024]), wherein the detuning of the first resonator from the driving frequency is defined as D1 = (omega - omega1)/gamma1 and is approximately equal to UV, and the detuning of the second resonator structure from the driving frequency is defined as D2 = (omega - omega2)/gamma2 (para [0024]) and is approximately equal to UV, wherein U1 is approximately equal to sqrt((1 + U^2)(1 - V^2)) (para [0028]).

Regarding claim 57, the combination of Joannopoulos and Qi discloses the method of claim 55, and Joannopoulos further discloses wherein, during operation, a power generator is coupled to one of the first and second resonant structure (para [0005]), with a coupling rate kappag (para [0006]), wherein Ug is defined as kappag/gamma1, if the power generator is coupled to the first resonator structure and defined as kappag/gamma2 if the power generator is coupled to the second resonator structure (para [0024]). Neither specifically discloses wherein a power generator is configured to drive the resonator structure, to which it is coupled, at a driving frequency f, corresponding to a driving angular frequency omega = 2pif. However, Richley does disclose wherein a power generator is configured to drive the resonator structure, to which it is coupled, at a driving frequency f, corresponding to a driving angular frequency omega = 2pif (col 9, ln 6-18). It would have been obvious to one of ordinary skill in the art to combine the method of Joannopoulos and Qi with the element of Richley because Richley teaches that its element addresses an ongoing need in the art for driving the resonators (Richley col 9, ln 6-18).

Regarding claim 58, the combination of Joannopoulos, Qi and Richley discloses the method of claim 57, and Joannopoulos further discloses wherein, during operation, a power load is coupled to the resonant structure to which the power generator is not coupled, and is configured to receive from the resonator structure, to which it is coupled, a usable power (para [0005]).

Regarding claim 61, the combination of Joannopoulos and Qi discloses the method of claim 59, and Joannopoulos further discloses wherein, during operation, a power generator is coupled to one of the first and second resonant structure (para [0005]), with a coupling rate kappag (para [0006]), wherein Ug is defined as kappag/gamma1, if the power generator is coupled to the first resonator structure and defined as kappag/gamma2 if the power generator is coupled to the second resonator structure (para [0024]). Neither specifically discloses wherein a power generator is configured to drive the resonator structure, to which it is coupled, at a driving frequency f, corresponding to a driving angular frequency omega = 2pif. However, Richley does disclose wherein a power generator is configured to drive the resonator structure, to which it is coupled, at a driving frequency f, corresponding to a driving angular frequency omega = 2pif (col 9, ln 6-18). It would have been obvious to one of ordinary skill in the art to combine the method of Joannopoulos and Qi with the element of Richley because Richley teaches that its element addresses an ongoing need in the art for driving the resonators (Richley col 9, ln 6-18).

Regarding claim 62, the combination of Joannopoulos, Qi and Richley discloses the method of claim 61, and Joannopoulos further discloses wherein, during operation, a power load is coupled to the resonant structure to which the power generator is not coupled, and is configured to receive from the resonator structure, to which it is coupled, a usable power (para [0005]).

Claims 1 - 63 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

Electronic Acknowledgement Receipt

EFS ID:	10025802
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	43520
Filer:	John H. Nortrop/Elizabeth Nortrup
Filer Authorized By:	John H. Nortrop
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	05-MAY-2011
Filing Date:	25-SEP-2009
Time Stamp:	10:19:13
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Filed (SB/08)	WTCY-0026-P01_050511_Form1449.pdf	96545 dbbe8ccd65d8f7a472851a03ecf37514891c01eb	no	3

Warnings:	
Information:	

This is not an USPTO supplied IDS fillable form					
2	Foreign Reference	WO10093997.pdf	11836766 66019d92b858e8cb06e4e4db0e17ffaf9b032c29	no	254
Warnings:					
Information:					
3	Foreign Reference	WO10039967.pdf	5864239 5d0b4843f7170e7aa57836339e9ec68626730fa7	no	128
Warnings:					
Information:					
4	Foreign Reference	WO2010030977_A2.pdf	658814 3bea86696a645c3bfdd0f68b6408311473a74c3e	no	17
Warnings:					
Information:					
5	Foreign Reference	WO2009149464_A2.pdf	6112375 ff96b202a23fed1f645758fa419f18dec77de9b1	no	144
Warnings:					
Information:					
6	Foreign Reference	WO09140506.pdf	5242650 8b68bf3904de9853b2d7538db476cc9b61b297ac	no	124
Warnings:					
Information:					
7	Foreign Reference	WO2007008646_A2.pdf	1179473 66b41211e95ea065462fe89cea81ef55c33c4d20	no	26
Warnings:					
Information:					
8	Foreign Reference	WO1992017929_A1.pdf	3303478 7520e5a4b1882298a2853a9ed9625e00b452e65d	no	71
Warnings:					
Information:					
9	NPL Documents	NPL-36_PCTUS0958499_ISR-121009.pdf	1734428 a1586867bb90d74b13903ed94a5c272f4f0f1e6f	no	11
Warnings:					
Information:					
10	NPL Documents	NPL-33_PCTUS0943970_ISR-WO_071409.pdf	895695 3ccf364bdf8ee04272029413c8aef58cd7e255f2	no	12

Warnings:					
Information:					
11	NPL Documents	NPL-108_SN12613686_NoA-030711.pdf	1551265 012a9e03b801d46ca18f7b80f95c0b69789d9cb3	no	27
Warnings:					
Information:					
			Total Files Size (in bytes):	38475728	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
ROBERT A. MAZZARESE
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference WTCY0026PWO	Date of mailing *(day/month/year)* **FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US 09/58499	International filing date *(day/month/year)* 25 September 2009 (25.09.2009)
Applicant WITRICITY CORPORATION	

80157.E92W01

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 8270

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

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DEC 14 2009
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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
ROBERT A. MAZZARESE
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 10 DEC 2009
Applicant's or agent's file reference WTCY0026PWO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US 09/58499	International filing date *(day/month/year)* 25 September 2009 (25.09.2009)
Applicant WITRICITY CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 8270

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference WTCY0026PWO	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US 09/58499	International filing date *(day/month/year)* 25 September 2009 (25.09.2009)	(Earliest) Priority Date *(day/month/year)* 27 September 2008 (27.09.2008)
Applicant WITRICITY CORPORATION		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out 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)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 1

   ☒ as suggested by the applicant.

   ☐ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

InductEV, Inc.
Exhibit 1002
Page 530

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 09/58499

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H03B 19/00 (2009.01)
USPC - 327/113
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC: 327/113

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 327/113, 306, 530, 555; 375/323; 307/134 (keyword limited - see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (PGPB, USPT, USOC, EPAB, JPAB); GOOGLE
Search Terms: energy, power, power generator, generator, wireless, resonator, first resonator, second resonator, third resonator, Q-factor, distance, tunable, oscillating, impedance, capacitance, load

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/0222542 A1 (Joannopoulos et al.) 27 September 2007 (27.09.2007), entire document, especially; abstract, para. [0004], [0005], [0013], [0014], [0019], [0023], [0025], [0029], [0033]	1 - 26
Y	US 6,452,465 B1 (Brown et al.) 17 September 2002 (17.09.2002), entire document, especially; abstract, col. 2, ln 4-6, col. 3, ln 7-12, 66-67	1 - 26

☐ Further documents are listed in the continuation of Box C. ☐

* 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 application or patent 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

Date of the actual completion of the international search	Date of mailing of the international search report
24 November 2009 (24.11.2009)	10 DEC 2009
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: ROBERT A. MAZZARESE
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	10 DEC 2009

Applicant's or agent's file reference	FOR FURTHER ACTION
WTCY0026PWO	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 09/58499	25 September 2009 (25.09.2009)	27 September 2008 (27.09.2008)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H03B 19/00 (2009.01)
USPC - 327/113

Applicant WITRICITY CORPORATION

1. This opinion contains indications relating to the following items:

- [X] 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
- [X] Box No. V Reasoned statement under Rule 43*bis*.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 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	27 November 2009 (27.11.2009)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/58499

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:

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Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1 - 26	YES
	Claims	None.	NO
Inventive step (IS)	Claims	None.	YES
	Claims	1 - 26	NO
Industrial applicability (IA)	Claims	1 - 26	YES
	Claims	None.	NO

2. Citations and explanations:

Claims 1 - 26 lack an inventive step under PCT Article 33(3) as being obvious over US 2007/0222542 A1 to Joannopoulos et al. (hereinafter 'Joannopoulos'), in view of US 6,452,465 B1 to Brown et al. (hereinafter 'Brown').

Regarding claim 1, Joannopoulos teaches a system, comprising: a source resonator having a Q-factor Q1 and a characteristic size X1 (abstract, para. [0005]), coupled to a power generator (external power supply, para. [0005]), and a second resonator having a Q-factor Q2 and a characteristic size X2 (para. [0005]), coupled to a load located a distance D from the source resonator (distance between the two resonators can be larger than the characteristic size of each resonator, para. [0005]), wherein the source resonator and the second resonator are coupled to exchange energy wirelessly among the source resonator and the second resonator (abstract, para. [0004], [0013]). Joannopoulos does not teach that the square root of Q1Q2 > 100. However, Brown teaches multiple resonators that are tunable (abstract), and that filters may be fabricated with low quality factor resonators (col. 2, ln 4-6). It would have been obvious to one skilled in the art to combine the teachings of Joannopoulos with those of Brown in order to provide an inexpensive resonator structure. Neither Joannopoulos nor Brown specifically teach that the square root of Q1Q2 > 100. However, this configuration could have been determined via routine experimentation, and provided based on the specific application of the system.

Regarding claims 2 and 3, neither Joannopoulos nor Brown teaches that Q1 (or Q2 - claim 3) < 100. However, it was well known it the art at the time of the invention that resonator materials were available with low quality factors, e.g. Q1 (or Q2 - claim 3) < 100. It would have been obvious to one skilled in the art to provide Q1 (or Q2 - claim 3) < 100, in order to provide an inexpensive resonator structure.

Regarding claims 4 and 5, neither Joannopoulos nor Brown specifically teaches a third resonator having a Q-factor Q3 configured to transfer energy non-raditively with the source and second resonators, wherein the square root of Q1Q3 > 100 and the square root of Q2Q3 > 100, wherein Q3 < 100 (claim - 5). However, this configuration could have been determined via routine experimentation, and provided based on the specific application of the system.

Regarding claim 6, Joannopoulos teaches that the source resonator is coupled to the power generator with direct electrical connections (para. [0014]).

Regarding claim 7, Joannopoulos teaches that the source resonator is coupled and impedance matched to the power generator with direct electrical connections (para. [0014]).

Regarding claim 8, Brown teaches a tunable circuit wherein the source resonator is coupled to the power generator through the tunable circuit with direct electrical connections (abstract, col. 3, ln 7-12).

Regarding claim 9, Joannopoulos teaches that at least one of the direct electrical connections is configured to substantially preserve a resonant mode of the source resonator (resonant cavity, para. [0033]).

Regarding claim 10, neither Joannopoulos nor Brown specifically teaches that the source resonator has a first terminal, a second terminal, and a center terminal, and wherein an impedance between the first terminal and the center terminal and between the second terminal and the center terminal are substantially equal. However, this configuration could have been determined via routine experimentation and provided to maximize power transfer.

Regarding claim 11, Joannopoulos teaches that the source resonator includes a capacitive loaded loop having a first terminal, a second terminal, and a center terminal (para. [0019]), and wherein an impedance between the first terminal and the center terminal and between the second terminal and the center terminal are substantially equal (para. [0019]).

Regarding claim 12, neither Joannopoulos nor Brown specifically teaches that the source resonator is coupled to an impedance matching network and the impedance matching network further comprises a first terminal, a second terminal, and a center terminal, and wherein an impedance between the first terminal and the center terminal and between the second terminal and the center terminal are substantially equal. However, this configuration could have been determined via routine experimentation and provided to maximize power transfer.

---(continued in Supplemental Box)---

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

V.2 Citations and explanations:

Regarding claim 13, neither Joannopoulos nor Brown teaches that the first terminal and the second terminal are directly coupled to the power generator and driven with oscillating signals that are near 180 degrees out of phase. However, this configuration was well known in the art at the time of the invention, and could have been provided based on the specific application.

Regarding claim 14, Joannopoulos teaches that the source resonator has a resonant frequency WI and the first terminal and the second terminal are directly coupled to the power generator and driven with oscillating signals that are substantially equal to the resonant frequency omega sub 1 (para. [0023], [0025]).

Regarding claim 15, neither Joannopoulos nor Brown specifically that the center terminal is connected to an electrical ground. However, this configuration was well known in the art at the time of the invention, and could have been provided in order to provide a voltage reference point.

Regarding claim 16, neither Joannopoulos nor Brown teach that the source resonator has a resonant frequency omega sub 1 and the first terminal and the second terminal are directly coupled to the power generator and driven with a frequency substantially equal to the resonant frequency omega sub 1. However, this configuration could have been determined via routine experimentation and provided to maximize power transfer.

Regarding claim 17, Brown teaches a plurality of capacitors coupled to the power generator and the load (col., 3, ln 66-67).

Regarding claim 18, Joannopoulos that the source resonator and the second resonator are each enclosed in a low loss tangent material (para. [0023]).

Regarding claim 19, Joannopoulos teaches a power conversion circuit wherein the second resonator is coupled to the power conversion circuit to deliver DC power to the load (abstract).

Regarding claim 20, Joannopoulos teaches a power conversion circuit wherein the second resonator is coupled to the power conversion circuit to deliver AC power to the load (power, abstract, para. [0029]).

Regarding claim 21, Joannopoulos teaches a power conversion circuit, wherein the second resonator is coupled to the power conversion circuit to deliver both AC and DC power to the load (power, abstract, para. [0029]).

Regarding claim 22, Joannopoulos teaches a power conversion circuit and a plurality of loads, wherein the second resonator is coupled to the power conversion circuit (abstract), and the power conversion circuit is coupled to the plurality of loads (abstract).

Regarding claim 23, Brown teaches the system, wherein the impedance matching network comprises capacitors (col., 3, ln 66-67).

Regarding claim 24, Joannopoulos teaches that the impedance matching network comprises inductors (coils, para. [0025]).

Regarding claim 25, Brown teaches that the tunable circuit comprises variable capacitors (col., 3, ln 66-67).

Regarding claim 26, Joannopoulos teaches that the tunable circuit comprises variable inductors (para. [0025]).

Claims 1 - 26 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annex B).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, International Phase, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet or sheets containing a complete set of claims in replacement of all the claims previously filed must be submitted.

Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively in Arabic numerals (Section 205(a)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

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Exhibit 1002
Page 536

ons concerning several claims may be grouped), whether

he claim is unchanged;

he claim is cancelled;

he claim is new;

he claim replaces one or more claims as filed;

ie claim is the result of the division of a claim as filed.

)les illustrate the manner in which amendments must be explained in the accompanying

there were 48 claims and after amendment of some claims there are 51]:
31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers;
36 unchanged; new claims 49 to 51 added."

there were 15 claims and after amendment of all claims there are 11]:
:placed by amended claims 1 to 11."

there were 14 claims and the amendments consist in cancelling some claims and in adding

1 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
ancelled; new claims 15, 16 and 17 added; all other claims unchanged."

nds of amendments are made]:
anged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended
7 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

-ticle 19(1)" (Rule 46.4)

be accompanied by a statement explaining the amendments and indicating any impact that
ht have on the description and the drawings (which cannot be amended under Article 19(1)).

published with the international application and the amended claims.

guage in which the international application is to be published.

:ceeding 500 words if in English or if translated into English.

ed with and does not replace the letter indicating the differences between the claims as filed
ust be filed on a separate sheet and must be identified as such by a heading, preferably by
ment under Article 19(1)."

y disparaging comments on the international search report or the relevance of citations
t. Reference to citations, relevant to a given claim, contained in the international search
ly in connection with an amendment of that claim.

ternational preliminary examination has already been filed

g any amendments and any accompanying statement, under Article 19, a demand for
ry examination has already been submitted, the applicant must preferably, at the time of
(and any statement) with the International Bureau, also file with the International
Authority a copy of such amendments (and of any statement) and, where required, a
endments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first
information, see the Notes to the demand form (PCT/IPEA/401).

ional preliminary examination is made, the written opinion of the International Searching
in certain cases where the International Preliminary Examining Authority did not act as
Authority and where it has notified the International Bureau under Rule 66.1*bis*(b), be
n opinion of the International Preliminary Examining Authority. If a demand is made, the
the International Preliminary Examining Authority a reply to the written opinion together,
h amendments before the expiration of 3 months from the date of mailing of Form
he expiration of 22 months from the priority date, whichever expires later (Rule 43*bis*.1(c)).

slation of the international application for entry into the national phase

n is drawn to the fact that, upon entry into the national phase, a translation of the claims as
19 may have to be furnished to the designated/elected Offices, instead of, or in addition to,
ims as filed.

the requirements of each designated/elected Office, see the *PCT Applicant's Guide*.

InductEV, Inc.
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SEQUENCE LISTINGS AND TABLES RELATED THERETO IN INTERNATIONAL APPLICATIONS FILED IN THE U.S. RECEIVING OFFICE

The Administrative Instructions (AIs) under the Patent Cooperation Treaty (PCT), in force as of **July 1, 2009**, contain important changes relating to the manner of filing, and applicable fees for, sequence listings and/or tables related thereto (sequence-related tables) in international applications. The complete text may be accessed at http://www.wipo.int/pct/en/texts/index.htm.

Effective **July 1, 2009**, Part 8 and Annex C-*bis* will no longer form part of the AIs. Part 8 was introduced in 2001 as a temporary solution to problems arising from the filing of very large sequence listings on paper and provided for a *sequence listing forming part of the international application* to be filed in electronic form on physical medium (*e.g.*, CD), together with the remainder of the application on paper. In 2002, Part 8 was expanded to include sequence-related tables and Annex C-*bis* was added to provide technical requirements. All applicants may now file complete international applications in electronic form, eliminating the need for these temporary provisions.

I. AIS PART 8 AND ANNEX C-*BIS DELETED AS OF JULY 1, 2009*

A) **Sequence-related tables cannot be filed as a separate part of the description or in text format.** They must be provided as an integral part of the international application either:
- in PDF format as part of an international application filed in electronic form via EFS-Web; or
- on paper as part of an international application filed on paper.

B) A ***sequence listing forming part of an international application*** may be provided either:
- in electronic form, as part of an international application filed in electronic form via EFS-Web, in
  - Annex C/ST.25 text format (preferred), or
  - PDF format; or
- on paper as part of an international application filed on paper.

C) **A *sequence listing not forming part of the international application* (for search under PCT Rule 13*ter*) in Annex C/ST.25 text format**
- is not required where the *sequence listing forming part of the international application* was filed in Annex C/ST.25 text format as part of an international application filed in electronic form via EFS-Web
- is required for search where the *sequence listing forming part of the international application* was filed in PDF
- is required for search on physical medium (*e.g.*, CD) where the *sequence listing forming part of the international application* was filed on paper as part of an international application filed on paper.

II. CALCULATION OF THE INTERNATIONAL FILING FEE AND FEE REDUCTION UNDER AI § 707

A) A **sequence-related table** must form an integral part of the international application and will incur FULL page fees with no upper limit.

B) A ***sequence listing forming part of an international application*** filed:
- via EFS-Web in Annex C/ST.25 text format will incur NO page fees;
- on paper or in PDF format will incur FULL page fees with no upper limit.

III. AVAILABILITY OF SEQUENCE LISTINGS SUBMITTED FOR SEARCH UNDER PCT RULE *13TER*

International Searching Authorities will be required to transmit to the International Bureau a copy of an Annex C/ST.25 text format sequence listing provided for search under PCT Rule 13*ter*. Any such sequence listing will be made available on PATENTSCOPE® (*sequence listings forming part of the international application* are already available).

IV. JULY 2009 REQUEST (PCT/RO/101)

The Request now has two options for the last sheet: one for paper filings; and one for EFS-Web filings. The July 2009 Request may be accessed at http://www.wipo.int/pct/en/forms/index.htm

Electronic Acknowledgement Receipt

EFS ID:	10901722
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	43520
Filer:	John A. Monocello/Jennifer Sammartin
Filer Authorized By:	John A. Monocello
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	08-SEP-2011
Filing Date:	25-SEP-2009
Time Stamp:	12:14:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	WitricityPOA.pdf	687821 0a6e6cd5c02dd7ebf85730f845774938933 2ba6f	no	5

Warnings:	
Information:	

Total Files Size (in bytes):	687821

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: See Appendix A
Filing Date: See Appendix A
Applicant(s): See Appendix A
Title: See Appendix A

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REVOCATION OF POWER OF ATTORNEY
AND
CHANGE OF CORRESPONDENCE ADDRESS

The undersigned hereby revokes all previous powers of attorney given in the applications identified in Appendix A, which is attached hereto, and appoints Practitioner(s) associated with Customer Number 87084 as the attorney(s) or agent(s) to prosecute the applications identified on Appendix A, and to transact all business in the United States Patent and Trademark Office connected therewith.

Change of Correspondence Address

Please direct all correspondence in the applications and patent identified in Appendix A to:

GTC Law Group LLP & Affiliates
c/o CPA Global
P.O. Box 52050
Minneapolis MN 55402
Customer No. 87084

Certificate Under 37 C.F.R. § 3.73(b)

WiTricity Corporation hereby certifies that it is the Assignee of the entire right, title and interest in the patent applications identified in Appendix A by virtue of assignments from the respective inventors. The Appendix includes a reel and frame number for the assignment of each application identified therein. To the best of the undersigned's knowledge and belief, title to all listed applications is in WiTricity Corporation. Pursuant to 37 C.F.R. § 3.73(b), the undersigned hereby declares that s/he is empowered to sign this certificate on behalf of the Assignee.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and believe are believed to be true.

Respectfully submitted,

WiTricity Corporation

Date: 9/9/11

By: _____

Name: Eric Giler

Title: CEO

APPENDIX

Listing of Pending Applications

Title	Serial No.	Filing Date	Reel	Frame
WIRELESS ENERGY TRANSFER IN LOSSY ENVIRONMENTS	12/705,582	02/13/2010	024087	0019
OPTIMIZED LOW RESISTANCE ELECTRICAL CONDUCTOR FOR THE MULTI-MHZ RANGE	61/411,490	11/09/2010	025488	0595
WIRELESS ENERGY TRANSFER USING VARIABLE SIZE RESONATORS AND SYSTEM MONITORING	12/647,705	12/28/2009	023918	0152
WIRELESS ENERGY TRANSFER BETWEEN A SOURCE AND A VEHICLE	12/770,137	04/29/2010	024475	0241
WIRELESS ENERGY TRANSFER SYSTEMS	12/567,716	09/25/2009	023599	0845
WIRELESS ENERGY TRANSFER USING PLANAR CAPACITIVELY LOADED CONDUCTING LOOP RESONATORS	12/613,686	11/06/2009	023482	0945
WIRELESS ENERGY TRANSFER USING HIGH Q RESONATORS FOR LIGHTING APPLICATIONS	12/636,891	12/14/2009	023652	0026
WIRELESS ENERGY TRANSFER FOR SUPPLYING POWER AND HEAT TO A DEVICE	12/650,916	12/31/2009	023918	0560
WIRELESS ENERGY TRANSFER WITH FREQUENCY HOPPING	12/651,005	12/31/2009	023918	0312
WIRELESS ENERGY TRANSFER RESONATOR KIT	12/639,718	12/16/2009	023918	0407
WIRELESS ENERGY TRANSFER USING FIELD SHAPING TO REDUCE LOSS	12/647,763	12/28/2009	023918	0491

WIRELESS ENERGY TRANSFER USING CONDUCTING SURFACES TO SHAPE FIELDS AND REDUCE LOSS	12/647,916	12/28/2009	023918	0560
WIRELESS ENERGY TRANSFER USING MAGNETIC MATERIALS TO SHAPE FIELD AND REDUCE LOSS	12/648,013	12/28/2009	023918	0613
WIRELESS ENERGY TRANSFER USING OBJECT POSITIONING FOR LOW LOSS	12/648,539	12/29/2009	023918	0645
WIRELESS ENERGY TRANSFER WITH HIGH-Q RESONATORS USING FIELD SHAPING TO IMPROVE K	12/648,604	12/29/2009	023918	0664
WIRELESS ENERGY TRANSFER USING CONDUCTING SURFACES TO SHAPE FIELD AND IMPROVE K	12/648,688	12/29/2009	023918	0696
WIRELESS ENERGY TRANSFER WITH HIGH-Q RESONATORS USING FIELD SHAPING TO IMPROVE K	12/648,793	12/29/2009	023918	0702
WIRELESS ENERGY TRANSFER USING OBJECT POSITIONING FOR IMPROVED K	12/649,173	12/29/2009	023918	0716
WIRELESS ENERGY TRANSFER OVER DISTANCE USING FIELD SHAPING TO IMPROVE THE COUPLING FACTOR	12/650,114	12/29/2009	023918	0739
WIRELESS ENERGY TRANSFER ACROSS VARIABLE DISTANCES USING FIELD SHAPING WITH MAGNETIC MATERIALS TO IMPROVE THE COUPLING FACTOR	12/650,386	12/30/2009	023918	0763
LOW AC RESISTANCE CONDUCTOR DESIGNS	12/639,489	12/16/2009	023664	0119
WIRELESS ENERGY TRANSFER FOR COMPUTER PERIPHERAL APPLICATIONS	12/612,880	11/05/2009	023781	0772

WIRELESS ENERGY TRANSFER WITH FEEDBACK CONTROL FOR LIGHTING APPLICATIONS	12/698,523	02/02/2010	023886	0778
WIRELESS ENERGY TRANSFER FOR REFRIGERATOR APPLICATION	12/722,050	03/11/2010	024087	0298
TUNABLE WIRELESS ENERGY TRANSFER SYSTEMS	12/986,018	01/06/2011	025894	0154
TEMPERATURE COMPENSATION IN A WIRELESS TRANSFER SYSTEM	12/749,571	03/30/2010	024157	0308
WIRELESS ENERGY TRANSFER USING REPEATER RESONATORS	12/720,866	03/10/2010	024449	0292
WIRELESS ENERGY TRANSFER USING REPEATER RESONATORS	12/759,047	04/13/2010	024223	0755
WIRELESS ENERGY TRANSFER RESONATOR ENCLOSURES	12/721,118	03/10/2010	024239	0361
RESONATOR OPTIMIZATIONS FOR WIRELESS ENERGY TRANSFER	12/757,716	04/09/2010	024377	0407
WIRELESS ENERGY TRANSFER FOR MEDICAL APPLICATIONS	13/090,369	04/20/2011	026432	0443
WIRELESS ENERGY TRANSFER CONVERTERS	12/767,633	04/26/2010	024414	0980
RESONATOR ARRAYS FOR WIRELESS ENERGY TRANSFER	12/789,611	05/28/2010	024454	0741
INTEGRATED RESONATOR-SHIELD STRUCTURES	12/860,375	08/20/2010	024868	0172
WIRELESS ENERGY TRANSFER FOR IMPLANTABLE DEVICES	13/154,131	06/06/2011	026524	0592
WIRELESS AND INTELLIGENT FLOORING	61/382,806	09/14/2010	025034	0051
WIRELESS ENERGY TRANSFER RESONATOR THERMAL MANAGEMENT	13/021,965	02/07/2011	025752	0765
WIRELESS ENERGY TRANSFER	61/466,783	03/23/2011	026043	0122

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/567,716	09/25/2009	Morris P. Kesler	WTCY-0026-P01

CONFIRMATION NO. 4901

87084
GTC Law Group LLP & Affiliates
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

POA ACCEPTANCE LETTER

OC000000049828640

Date Mailed: 09/19/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/08/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/atesfai/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/567,716	09/25/2009	Morris P. Kesler	WTCY-0026-P01

CONFIRMATION NO. 4901

POWER OF ATTORNEY NOTICE

43520
STRATEGIC PATENTS P.C..
C/O CPA Global
P.O. BOX 52050
MINNEAPOLIS, MN 55402

OC000000049828487

Date Mailed: 09/19/2011

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/08/2011.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/atesfai/

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.K./

Date Received: 2/22/2011

PTO/SB/08a (01-08)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known

Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	1	of	6	Attorney Docket No: WTCY-0026-P01

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EXAMINER /Hal Kaplan/ **DATE CONSIDERED** 06/20/2012

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Application Number	12/567,716
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First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	2	of	6

Attorney Docket No: WTCY-0026-P01

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Sheet	3	of	6

Attorney Docket No: WTCY-0026-P01

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Complete if Known	
Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	4	of	6	Attorney Docket No: WTCY-0026-P01

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EXAMINER /Hal Kaplan/ **DATE CONSIDERED** 06/20/2012

Substitute Disclosure Statement Form (PTO-1449)
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PTO/SB/08a (01-08)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known	
Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	5	of	6	Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS					
Examiner Initial *	**Cite No**	**Document Number**	**Publication Date**	**Name of Patentee or Applicant of Cited Document**	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
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EXAMINER /Hal Kaplan/ **DATE CONSIDERED** 06/20/2012

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Sheet	6	of	6

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EXAMINER /Hal Kaplan/ **DATE CONSIDERED** 06/20/2012

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Field

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12/567,716
	Filing Date	Sep 25, 2009
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	Examiner Name	KAPLAN, Hal Ira
Sheet 1 of 3	**Attorney Docket No.**	WTCY-0026-P01

U.S. PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

U.S. PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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Sheet 2 of 3	**Attorney Docket No.**	WTCY-0026-P01

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
/H.K./	NPL-36	"ISR and WO for Int'l Appl. No. PCT/US2009/58499", PCT/US09/58499 12/10/2009 , all	
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/H.K./	NPL-108	"Application Serial No. 12/613,686 (Atty Ref WTCY-0026-P02), Notice of Allowance mailed 03/07/2011", SN12/613,686 , 27	

EXAMINER SIGNATURE			
Examiner Signature	/Hal Kaplan/	Date Considered	06/20/2012

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[4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Complete if Known	
Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	1	of	1	Attorney Docket No: WTCY-0026-P01

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Examiner Initial *	**Cite No**	**Document Number**	**Publication Date**	**Name of Patentee or Applicant of Cited Document**	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
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Examiner Name	Not Yet Known

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

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Examiner Name	KAPLAN, Hal Ira

Sheet	13	of	14	Attorney Docket No: WTCY-0026-P01

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No [1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	NPL-68	SAKAMOTO, et al., ""A Novel Circuit for Non-Contact Charging Through Electro-Magnetic Coupling"", IEEE 1992 1992 , 168-174	
	NPL-69	SCHEIBLE, G et al., ""Novel Wireless Power Supply System for Wireless Communication Devices in Industrial Automation Systems"", IEEE 2002 2002	
	NPL-70	SCHUTZ, J et al., ""Load Adaptive Medium Frequency Resonant Power Supply"", IEEE 2002 2002	
	NPL-72	SEKITANI, et al., ""A large-area flexible wireless power transmission sheet using printed plastic MLMS switches and organic field-effect transistors""", Publication Unknown	
	NPL-73	SEKITANI, et al., ""A large-area wireless power transmission sheet using printed organic transistors and plastic MEMS switches"", www.nature.com/naturematerials Published online April 29, 2007 April 29, 2007	
	NPL-56	SENGE, MIEBI , ""MIT's wireless electricity for mobile phones"", Vanguard (see http://www.vanguardngr.com/articles/2002/features/gsm/gsm211062007.htm) 6/11/2007	
	NPL-74	SENSIPER, S. , ""Electromagnetic wave propogation on helical conductors", PhD Thesis Massachusetts Institute of Technology 1951	
	NPL-75	SOLJACIC, MARIN et al., ""Photonic-crystal slow light enhancement of nonlinear phase sensitivity"", J. Opt. Soc. Am B Vol 19, No. 9 9/2002,2052-2059	
	NPL-76	SOLJACIC, MARIN , ""Wireless Non-Radiative Energy Transfer"", Power Point Presentation Massachusetts Institute of Technology 10/6/2005	
	NPL-77	SOMEYA, TAKAO , ""The world's first sheet-type wireless power transmission system"", University of Tokyo December 12, 2006	
	NPL-78	SPLASHPOWER, , ""Splashpower - World Leaders in Wireless Power"", Powerpoint presentation 9/3/2007 , 30 pages	
	NPL-79	STAELIN, DAVID H. et al., Electromagnetic Waves, Chapters 2,3,4, and 8 Prentice Hall Upper Saddle River, New Jersey 1998 , 46-176 and 336-405	
	NPL-81	TESLA, NIKOLA , ""High Frequency Oscillators for Electro-Therapeutic and Other Purposes"", The Electrical Engineer Vol XXVI, No. 50 11/17/1898	
	NPL-80	TESLA, NIKOLA , ""High Frequency Oscillators for Electro-Therapeutic and Other Purposes"", Proceedings of the IEEE, Vol. 87 July 1999 , 1282-1292	
	NPL-3	THOMSEN, et al., ""Ultrahigh speed all-optical demultiplexing based on two-photo absorption in a laser diode"", Electronics Letters, 34(19) 9/17/1998 , 1871-1872	

EXAMINER /Hal Kaplan/ **DATE CONSIDERED** 06/20/2012

Substitute Disclosure Statement Form (PTO-1449)
* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.K./

PTO/SB/08a (01-08)
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known	
Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	14	of	14	Attorney Docket No: WTCY-0026-P01

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	NPL-91	VANDEVOORDE, et al., ""Wireless energy transfer for stand-alone systems: a comparison between low and high power applicability"", Sensors and Actuators A 92 2001 , 305-311	
	NPL-92	VILKOMERSON, DAVID et al., ""Implantable Doppler System for Self-Monitoring Sascular Grafts"", IEEE Ultrasonics Symposium 2004 , 461-465	
	NPL-100	YARIV, AMNON et al., ""Coupled-resonator optical waveguide: a proposal and analysis"", Optics Letters Vol 24, No. 11 6/1/1999 , 711-713	
	NPL-42	YOSHIHIRO, KONISHI , Microwave Electronic Circuit Technology Chapter 4 (Marcel Dekker, Inc., New York, NY 1998) , 145-197	
	NPL-101	ZIERHOFER, CLEMENS et al., ""High Efficiency Coupling-Insensitive Transcutaneous Power and Data Transmission Via an Inductive link"", IEEE Transactions on Biomedical Engineering, Vol. 37, No. 7 7/1990 , 716-722	

EXAMINER /Hal Kaplan/ **DATE CONSIDERED** 06/20/2012

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BIB DATA SHEET

CONFIRMATION NO. 4901

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/567,716	09/25/2009 RULE	307	2836	WTCY-0026-P01

APPLICANTS

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**** CONTINUING DATA ***************************

This appln claims benefit of 61/100,721 09/27/2008
and claims benefit of 61/108,743 10/27/2008
and claims benefit of 61/147,386 01/26/2009
and claims benefit of 61/152,086 02/12/2009
and claims benefit of 61/178,508 05/15/2009
and claims benefit of 61/182,768 06/01/2009
and claims benefit of 61/121,159 12/09/2008
and claims benefit of 61/142,977 01/07/2009
and claims benefit of 61/142,885 01/06/2009
and claims benefit of 61/142,796 01/06/2009
and claims benefit of 61/142,889 01/06/2009
and claims benefit of 61/142,880 01/06/2009
and claims benefit of 61/142,818 01/06/2009
and claims benefit of 61/142,887 01/06/2009
and claims benefit of 61/156,764 03/02/2009
and claims benefit of 61/143,058 01/07/2009
and claims benefit of 61/152,390 02/13/2009
and claims benefit of 61/163,695 03/26/2009
and claims benefit of 61/172,633 04/24/2009
and claims benefit of 61/169,240 04/14/2009
and claims benefit of 61/173,747 04/29/2009

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged /HAL IRA KAPLAN/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		MA	53	23	3

ADDRESS

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12/567,716	09/25/2009	Morris P. Kesler	WTCY-0026-P01	4901

87084 7590 06/28/2012

GTC Law Group LLP & Affiliates
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EXAMINER	
KAPLAN, HAL IRA	

ART UNIT	PAPER NUMBER
2836	

NOTIFICATION DATE	DELIVERY MODE
06/28/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jsammartin@gtclawgroup.com
jmonocello@gtclawgroup.com
gtcdocketing@cpaglobal.com

Office Action Summary	Application No.	Applicant(s)	
	12/567,716	KESLER ET AL.	
	Examiner	Art Unit	
	HAL KAPLAN	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-23* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☒ Claim(s) *22 and 23* is/are allowed.

7)☒ Claim(s) *1-6,17,18 and 21* is/are rejected.

8)☒ Claim(s) *7-16,19 and 20* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *25 September 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :3/15/10,3/29/10,1/7/11,1/7/11,2/22/11,3/1/11,5/5/11.

InductEV, Inc.
Exhibit 1002
Page 575

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

2. Claim 15 is objected to because of the following informalities: Claim 15, line 1, “the direct electrical connections” lacks proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. The term "useful" in claim 4 is a relative term which renders the claim indefinite. The term "useful" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3, 4, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by the US patent of Joannopoulos et al. (7,741,734).

As to claim 1, Joannopoulos discloses a system comprising: a source resonator (1) having a first Q-factor and a characteristic size, coupled to a power generator (power supply) with direct electrical connections; and a second resonator (2) having a second Q-factor and a characteristic size, coupled to a load with direct electrical connections, and located a distance D from the source resonator (1), wherein the source resonator (1) and the second resonator (2) are coupled to exchange energy wirelessly among the source resonator (1) and the second resonator (2) in order to transmit power from the power generator to the load, wherein the square root of the product of the Q-factors is greater than 100 (if both Q-factors are greater than 100, the square root of their product will be greater than 100) (see column 1, lines 54-60; column 2, lines 30-33 and 58-61; column 4, lines 37-40; and Figure 1).

As to claim 3, the first and second Q-factors are both greater than 100.

As to claim 4, a useful energy exchange is maintained over an operating distance from 0 to D, where D is larger than the smaller of the first and second characteristic sizes (see column 1, lines 58-60).

As to claim 17, the source resonator (1) is physically separated from the power generator and the second resonator (2) is physically separated from the load (see Figure 1).

8. Claims 1, 5-6, 18, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by the US patent application publication of Cook et al. (2012/0001492).

As to claim 1, Cook discloses a system comprising: a source resonator (112) having a first Q-factor and a characteristic size, coupled to a power generator (102) with direct electrical connections; and a second resonator (155) having a second Q-factor and a characteristic size, coupled to a load with direct electrical connections, and located a distance D from the source resonator (112), wherein the source resonator (112) and the second resonator (155) are coupled to exchange energy wirelessly among the source resonator (112) and the second resonator (155) in order to transmit power from the power generator to the load, wherein the square root of the product of the Q-factors is greater than 100 (e.g. the first Q-factor may be 1400 and the second Q-factor may be 300) (see paragraphs [0020]-[0021], [0025], and [0034], and Figure 1).

As to claim 5, the source (112) resonator is a coil of at least one turn (113) connected to a first network of capacitors (114) (see paragraphs [0021] and [0034], and Figure 1).

As to claim 6, the first network of capacitors (114) includes a tunable capacitor (see paragraphs [0021] and [0025]).

As to claim 18, the second resonator (155) is coupled to a power conversion circuit (160) to deliver DC power to the load (see paragraph [0025] and Figure 1).

As to claim 21, the second resonator (155) is coupled to a power conversion circuit (160) to deliver power to plurality of loads (e.g. loads within an automobile) (see paragraph [0025]).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cook.

As to claim 2, Cook discloses all of the claimed features, as set forth above, except for the first Q-factor being greater than 100 and the second Q-factor being less than 100; however, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified Cook by setting the first Q-factor greater than 100 and the second Q-factor less than 100, because selections of values of components and operational levels for an electronic device are engineering decisions based upon the system's intended use and the expected requirements of the other systems with which it will interface. See MPEP §2144.04(IV)(A). In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Allowable Subject Matter

13. Claims 22-23 allowed.

14. Claims 7-16, and 19-20 are objected to as being dependent upon a rejected base claim, and because of an informality, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, with the informality corrected.

15. The following is an examiner's statement of reasons for allowance:

Claim 22 is allowed because none of the prior art of record discloses or suggests the square root of the product of the first and second Q-factors being greater than 100, and at least one of the resonators being enclosed in a low loss tangent material, in combination with the remaining claimed features.

Claim 23 is allowed because none of the prior art of record discloses or suggests at least one of the resonators including a coil of a plurality of turns of a conducting material connected to a network of capacitors, wherein the plurality of turns are in a common plane, and wherein a characteristic thickness of the at least one of the resonators is much less than a characteristic size of the at least one of the resonators, in combination with the remaining claimed features.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

16. The following is a statement of reasons for the indication of allowable subject matter:

Claims 7-8 contain allowable subject matter because none of the prior art of record discloses or suggests the direct electrical connections of at least one of the source resonator to the ground terminal of the power generator and the second resonator to the ground terminal of the load made at a point on an axis of electrical symmetry of the first network of capacitors, in combination with the remaining claimed features.

Claims 9-14 contain allowable subject matter because none of the prior art of record discloses or suggests the direct electrical connection of at least one of the source resonator to the power generator and the second resonator to the load made via a second network of capacitors, wherein the first network of capacitors and the second network of capacitors form an impedance matching network, in combination with the remaining claimed features.

Claim 15 contains allowable subject matter because none of the prior art of record discloses or suggests the direct electrical connections of at least one of the source resonator to the power generator and the second resonator to the load are configured to substantially preserve a resonant mode, in combination with the remaining claimed features.

Claim 16 contains allowable subject matter because none of the prior art of record discloses or suggests at least one of the source and second resonators being a tunable resonator, in combination with the remaining claimed features.

Claim 19 contains allowable subject matter because none of the prior art of record discloses or suggests the second resonator coupled to a power conversion

circuit to deliver AC power to the load, in combination with the remaining claimed features.

Claim 20 contains allowable subject matter because none of the prior art of record discloses or suggests the second resonator coupled to a power conversion circuit to deliver both AC and DC power to the load, in combination with the remaining claimed features.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAL KAPLAN whose telephone number is (571)272-8587. The examiner can normally be reached on M-F 9:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jared Fureman can be reached on 571-272-2391. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hal I. Kaplan/
Primary Examiner, Art Unit 2836

PTO/SB/08a (01-08)
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/H.K./		20110043047A1	Feb 24, 2011	Karalis, Aristeidis et al.	
/H.K./		20110043048A1	Feb 24, 2011	Karalis, Aristeidis et al.	
/H.K./		20110043049A1	Feb 24, 2011	Karalis, Aristeidis et al.	

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/H.K./		20070222542A1	Sep 27, 2007	Joannopoulos, J. D., et al.	
/H.K./		20090085706	Apr 2, 2009	Baarman, David W., et al.	
/H.K./		20090230777	Sep 17, 2009	Baarman, David W., et al.	
/H.K./		6452465B1	Sep 17, 2002	Brown, B. et al.	
/H.K./		7492247	Feb 17, 2009	Schmidt, Josef et al.	

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/H.K./	NPL-1	, "International Application Serial No. PCT/US09/58499, Search Report and Written Opinion mailed 12-10-2009",	

EXAMINER /Hal Kaplan/ **DATE CONSIDERED** 06/20/2012

Substitute Disclosure Statement Form (PTO-1449)
* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12567716	KESLER ET AL.
	Examiner	Art Unit
	HAL KAPLAN	2836

SEARCHED			
Class	Subclass	Date	Examiner
307	104	6/20/2012	HK

SEARCH NOTES		
Search Notes	Date	Examiner
EAST (US-PGPUB,USPAT,USOCR,FPRS,EPO,JPO,DERWENT,IBM_TDB) - See Search History Printout	6/20/2012	HK
EAST (US-PGPUB,USPAT,USOCR,FPRS,EPO,JPO,DERWENT,IBM_TDB) - See Search History Printout	6/21/2012	HK
EAST (US-PGPUB,USPAT,USOCR,FPRS,EPO,JPO,DERWENT,IBM_TDB) - See Search History Printout	6/22/2012	HK
Inventor name search	6/21/2012	HK

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	284	(wireless with (power energy) with (transfer$4 transmi$5) and (resonat$3 with (q-factor (q adj factor) (quality adj factor))))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/22 17:10
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S24	105	karalis-aristeidis.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/20 16:05
S25	4	("20100225272" "20100308939").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/21 13:45
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S29	35	campanella-andrew-j.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/21 16:14
S30	17	fiorello-ron.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	ON	2012/06/21 16:17

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S43	2328	307/104.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/21 16:36
S44	48	307/104.ccls. and (resonator with coil with turn)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/22 11:23
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S47	0	S45 and (resonator same coil same turn)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/06/22 14:23
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Art Unit	2836
Examiner Name	Kaplan, Hal Ira
Attorney Docket Number	WTCY-0026-P01

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12567716
	Filing Date	2009-09-25
	First Named Inventor	Kesler, Morris P.
	Art Unit	2836
	Examiner Name	Kaplan, Hal Ira
	Attorney Docket Number	WTCY-0026-P01

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	First Named Inventor	Kesler, Morris P.
	Art Unit	2836
	Examiner Name	Kaplan, Hal Ira
	Attorney Docket Number	WTCY-0026-P01

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	102239633	CN	A	2011-11-09	WiTricity Corporation	English Abstract Only	☐
	2	2340611	EP	A1	2011-07-06	WiTricity Corporation	English Abstract Only	☐
	3	2396796	EP	A1	2011-12-21	WiTricity Corporation	English Abstract Only	☐

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	Attorney Docket Number	WTCY-0026-P01

	4	1734/KOLNP/2011	IN		2011-09-02	WiTricity Corporation		☐
	5	02097005	JP	A	1990-04-09	Tokyo Cosmos Electric Co., Ltd.	English Abstract Only	☐
	6	2012504387	JP	A	2012-02-16	WiTricity Corporation	English Abstract Only	☐
	7	2006011769	WO	A1	2006-02-02	JC Protek Co., Ltd.		☐
	8	2011112795	WO	A1	2011-09-15	WiTricity Corporation		☐
	9	2012037279	WO	A1	2012-03-22	WiTricity Corporation		☐
	10	2011062827	WO	A2	2011-05-26	Apple Inc.		☐
	11	11188113	JP	A	1999-07-13	Seiichi, Ishikawa		☐

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	International Application No. PCT/US2011/027868, International Search Report and Written Opinion mailed July 5, 2011, 9 pages.	☐

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	2	International Application Serial No. PCT/US2009/058499, International Preliminary Report on Patentability issued on March 29, 2011, 5 pages.	☐
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	7	KURS et al., "Simultaneous mid-range power transfer to multiple devices", Applied Physics Letters, Vol. 96, No. 044102, February 2, 2010, pp. 044102-1 - 044102-3.	☐
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	Attorney Docket Number	WTCY-0026-P01

	13	STARK III, JOSEPH C., "Wireless Power Transmission Utilizing a Phased Array of Tesla Coils", Master Thesis, Massachusetts Institute of Technology, May 2004, 247 pages.	☐
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If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Attorney Docket Number	WTCY-0026-P01

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/John A. Monocello, III/	Date (YYYY-MM-DD)	2012-09-10
Name/Print	John A. Monocello, III	Registration Number	51022

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference WTCY0026PWO	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2009/058499	International filing date *(day/month/year)* 25 September 2009 (25.09.2009)	Priority date *(day/month/year)* 27 September 2008 (27.09.2008)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant WITRICITY CORPORATION		

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).

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   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.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	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 Article 35(2) 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

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.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 44*bis* .2).

	Date of issuance of this report 29 March 2011 (29.03.2011)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Dorothée Mülhausen e-mail: pt01.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: ROBERT A. MAZZARESE
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	10 DEC 2009
Applicant's or agent's file reference: WTCY0026PWO	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 09/58499	25 September 2009 (25.09.2009)	27 September 2008 (27.09.2008)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H03B 19/00 (2009.01)
USPC - 327/113

Applicant WITRICITY CORPORATION

1. This opinion contains indications relating to the following items:

- [X] 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
- [X] Box No. V Reasoned statement under Rule 43*bis*.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 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	27 November 2009 (27.11.2009)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/58499

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 INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/58499

Box No. V . Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1 - 26	YES
	Claims	None.	NO
Inventive step (IS)	Claims	None.	YES
	Claims	1 - 26	NO
Industrial applicability (IA)	Claims	1 - 26	YES
	Claims	None.	NO

2. Citations and explanations:

Claims 1 - 26 lack an inventive step under PCT Article 33(3) as being obvious over US 2007/0222542 A1 to Joannopoulos et al. (hereinafter 'Joannopoulos'), in view of US 6,452,465 B1 to Brown et al. (hereinafter 'Brown').

Regarding claim 1, Joannopoulos teaches a system, comprising: a source resonator having a Q-factor Q1 and a characteristic size X1 (abstract, para. [0005]), coupled to a power generator (external power supply, para. [0005]), and a second resonator having a Q-factor Q2 and a characteristic size X2 (para. [0005]), coupled to a load located a distance D from the source resonator (distance between the two resonators can be larger than the characteristic size of each resonator, para. [0005]), wherein the source resonator and the second resonator are coupled to exchange energy wirelessly among the source resonator and the second resonator (abstract, para. [0004], [0013]). Joannopoulos does not teach that the square root of Q1Q2 > 100. However, Brown teaches multiple resonators that are tunable (abstract), and that filters may be fabricated with low quality factor resonators (col. 2, ln 4-6). It would have been obvious to one skilled in the art to combine the teachings of Joannopoulos with those of Brown in order to provide an inexpensive resonator structure. Neither Joannopoulos nor Brown specifically teach that the square root of Q1Q2 > 100. However, this configuration could have been determined via routine experimentation, and provided based on the specific application of the system.

Regarding claims 2 and 3, neither Joannopoulos nor Brown teaches that Q1 (or Q2 - claim 3) < 100. However, it was well known it the art at the time of the invention that resonator materials were available with low quality factors, e.g. Q1 (or Q2 - claim 3) < 100. It would have been obvious to one skilled in the art to provide Q1 (or Q2 - claim 3) < 100, in order to provide an inexpensive resonator structure.

Regarding claims 4 and 5, neither Joannopoulos nor Brown specifically teaches a third resonator having a Q-factor Q3 configured to transfer energy non-raditively with the source and second resonators, wherein the square root of Q1Q3 > 100 and the square root of Q2Q3 > 100, wherein Q3 < 100 (claim - 5). However, this configuration could have been determined via routine experimentation, and provided based on the specific application of the system.

Regarding claim 6, Joannopoulos teaches that the source resonator is coupled to the power generator with direct electrical connections (para. [0014]).

Regarding claim 7, Joannopoulos teaches that the source resonator is coupled and impedance matched to the power generator with direct electrical connections (para. [0014]).

Regarding claim 8, Brown teaches a tunable circuit wherein the source resonator is coupled to the power generator through the tunable circuit with direct electrical connections (abstract, col. 3, ln 7-12).

Regarding claim 9, Joannopoulos teaches that at least one of the direct electrical connections is configured to substantially preserve a resonant mode of the source resonator (resonant cavity, para. [0033]).

Regarding claim 10, neither Joannopoulos nor Brown specifically teaches that the source resonator has a first terminal, a second terminal, and a center terminal, and wherein an impedance between the first terminal and the center terminal and between the second terminal and the center terminal are substantially equal. However, this configuration could have been determined via routine experimentation and provided to maximize power transfer.

Regarding claim 11, Joannopoulos teaches that the source resonator includes a capacitive loaded loop having a first terminal, a second terminal, and a center terminal (para. [0019]), and wherein an impedance between the first terminal and the center terminal and between the second terminal and the center terminal are substantially equal (para. [0019]).

Regarding claim 12, neither Joannopoulos nor Brown specifically teaches that the source resonator is coupled to an impedance matching network and the impedance matching network further comprises a first terminal, a second terminal, and a center terminal, and wherein an impedance between the first terminal and the center terminal and between the second terminal and the center terminal are substantially equal. However, this configuration could have been determined via routine experimentation and provided to maximize power transfer.

---(continued in Supplemental Box)---

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/58499

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

V.2 Citations and explanations:

Regarding claim 13, neither Joannopoulos nor Brown teaches that the first terminal and the second terminal are directly coupled to the power generator and driven with oscillating signals that are near 180 degrees out of phase. However, this configuration was well known in the art at the time of the invention, and could have been provided based on the specific application.

Regarding claim 14, Joannopoulos teaches that the source resonator has a resonant frequency WI and the first terminal and the second terminal are directly coupled to the power generator and driven with oscillating signals that are substantially equal to the resonant frequency omega sub 1 (para. [0023], [0025]).

Regarding claim 15, neither Joannopoulos nor Brown specifically that the center terminal is connected to an electrical ground. However, this configuration was well known in the art at the time of the invention, and could have been provided in order to provide a voltage reference point.

Regarding claim 16, neither Joannopoulos nor Brown teach that the source resonator has a resonant frequency omega sub 1 and the first terminal and the second terminal are directly coupled to the power generator and driven with a frequency substantially equal to the resonant frequency omega sub 1. However, this configuration could have been determined via routine experimentation and provided to maximize power transfer.

Regarding claim 17, Brown teaches a plurality of capacitors coupled to the power generator and the load (col., 3, ln 66-67).

Regarding claim 18, Joannopoulos that the source resonator and the second resonator are each enclosed in a low loss tangent material (para. [0023]).

Regarding claim 19, Joannopoulos teaches a power conversion circuit wherein the second resonator is coupled to the power conversion circuit to deliver DC power to the load (abstract).

Regarding claim 20, Joannopoulos teaches a power conversion circuit wherein the second resonator is coupled to the power conversion circuit to deliver AC power to the load (power, abstract, para. [0029]).

Regarding claim 21, Joannopoulos teaches a power conversion circuit, wherein the second resonator is coupled to the power conversion circuit to deliver both AC and DC power to the load (power, abstract, para. [0029]).

Regarding claim 22, Joannopoulos teaches a power conversion circuit and a plurality of loads, wherein the second resonator is coupled to the power conversion circuit (abstract), and the power conversion circuit is coupled to the plurality of loads (abstract).

Regarding claim 23, Brown teaches the system, wherein the impedance matching network comprises capacitors (col., 3, ln 66-67).

Regarding claim 24, Joannopoulos teaches that the impedance matching network comprises inductors (coils, para. [0025]).

Regarding claim 25, Brown teaches that the tunable circuit comprises variable capacitors (col., 3, ln 66-67).

Regarding claim 26, Joannopoulos teaches that the tunable circuit comprises variable inductors (para. [0025]).

Claims 1 - 26 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

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2:03 pm, Feb 03, 2012

PATENT COOPERATION TREATY

ARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

To: STUART MEYER
FENWICK & WEST LLP
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

	Date of mailing *(day/month/year)* 30 JAN 2012
Applicant's or agent's file reference 17157 PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2011/054544	International filing date *(day/month/year)* 03 October 2011
Applicant WITRICITY CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 17157 PCT	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2011/054544	International filing date *(day/month/year)* 03 October 2011	(Earliest) Priority Date *(day/month/year)* 06 October 2010
Applicant WITRICITY CORPORATION		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out 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)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the drawings to be published with the abstract is Figure No. 1

   ☒ as suggested by the applicant.

   ☐ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/054544

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H02J 7/02 (2011.01)
USPC - 320/109
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - B60L 11/18; B60Q 1/52; G01R 31/36; H02J 7/00, 7/02; H04B 5/00; H04M 10/44 (2012.01)
USPC - 180/65.29; 307/104; 320/108, 109, 149, 152

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase, Google Patents, Google Scholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002/0167294 A1 (ODAOHHARA) 14 November 2002 (14.11.2002) entire document	1-56
Y	US 2010/0235006 A1 (BROWN) 16 September 2010 (16.09.2010) entire document	1-56
Y	US 2010/0156355 A1 (BAUERLE et al) 24 June 2010 (24.06.2010) entire document	3, 7, 26-30, 51, 54
Y	US 6,012,659 A (NAKAZAWA et al) 11 January 2000 (11.01.2000) entire document	5-6
Y	US 2010/0109445 A1 (KURS et al) 06 May 2010 (06.05.2010) entire document	10-12, 17, 26-30, 34, 39
Y	US 2007/0024246 A1 (FLAUGHER) 01 February 2007 (01.02.2007) entire document	18
Y	US 2006/0214626 A1 (NILSON et al) 28 September 2006 (28.09.2006) entire document	45

☐ Further documents are listed in the continuation of Box C. ☐

* 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 application or patent 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

Date of the actual completion of the international search	Date of mailing of the international search report
12 January 2012	30 JAN 2012
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: STUART MEYER
FENWICK & WEST LLP
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	30 JAN 2012

Applicant's or agent's file reference	FOR FURTHER ACTION
17157 PCT	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2011/054544	03 October 2011	06 October 2010

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H02J 7/02 (2012.01)
USPC - 320/109

Applicant WITRICITY CORPORATION

1. This opinion contains indications relating to the following items:

- [x] 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
- [x] Box No. V Reasoned statement under Rule 43*bis*.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 66.1*bis*(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/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	12 January 2012	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2011/054544

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:

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2011/054544

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-56	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-56	NO
Industrial applicability (IA)	Claims	1-56	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-2, 4, 8-9, 13-16, 19-25, 31-33, 35-38, 40-44, 46-50, 52-53, and 55-56 lack an inventive step under PCT Article 33(3) as being obvious over Odaohhara in view of Brown.

Regarding claims 1 and 49, Odaohhara disclose a safety system (par. 12-13, power supply system) and method (par. 17, method) for a charger to provide protection (par. 12, maintain safety when a battery is connected to a charger) with respect to an object that may become hot during operation of the charger (par. 12, battery maybe charged to a voltage above predetermined voltage, which causes the battery to become hot), the safety system (par. 12, system to maintain safety) comprising: a detection subsystem (par. 13, detecting means; par. 43, current detection circuit 64 and voltage detection circuit 63; par. 56, abnormal current detection table 73; fig.5) for detecting an object (par. 18, recognize the battery is connected to charger); and a notification subsystem (par. 13, notification means; par. 52, notification unit 76) operatively coupled to the detection subsystem (73, detection table) and configured to provide an indication of the object (par. 13-14, notifying system of malfunction occurrence of the battery), but is silent on the particulars of the detecting the presence of an object in substantial proximity to the charger.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose detecting an object in proximity to a charger (par. 30-32, detect the presence of the vehicle is now approaching the apparatus, or charger).
Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claims 2 and 50, modified Odaohhara disclose claims 1 and 50, respectively, Odaohhara further disclose comprising a management subsystem (fig. 2, CPU 61 within intelligent battery system; par. 43-44, CPU 61 is adapted to detect abnormal charging) operatively coupled to the detection subsystem (fig. 2, CPU 61 connected to detection circuit 63, 64; par. 43-44) and configured to mitigate an effect of the object (par. 51-52, based on the CPU 61 functionality determine whether to turn off or continue charging of battery).

Regarding claim 4, modified Odaohhara disclose a safety system as in claim 1, Odaohhara further disclose wherein the notification subsystem includes an annunciator (par. 62, notify the user of malfunction with a beep sound).

Regarding claims 8 and 55, modified Odaohhara claims 2 and 50, respectively, but Odaohhara is silent on the particulars of wherein the management subsystem is configured to move the object.
However, Brown in discussing a method and apparatus for automatic charging of electrically powered vehicle (title) disclose moving an object (par. 111, base may be movable within the plane of the ground; par. 46, charging apparatus 110a moves in one, two or all three axes and rotate as necessary). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Regarding claim 9, modified Odaohhara disclose a safety system as in claim 2, Odaohhara further disclose the management subsystem (61, CPU) is configured to alter operation of the charger (par. 51-52, based on the CPU 61 it is determined whether to continue or abort operation of charger), but Odaohhara is silent on the particulars of responsive to detection of the object.
However, Brown in discussing a method and apparatus for automatic charging of electrically powered vehicle (title) disclose altering an operation of a charger responsive to detection of an object (par. 35, various triggers associated with the vehicle, or object, can alter the operation of charging the vehicle). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claim 13, modified Odaohhara disclose a safety system as in claim 1, but Odaohhara is silent on wherein the detection subsystem includes a wall-mounted sensor.
However, Brown in discussing a method and apparatus for automatic charging of electrically powered vehicle (title) disclose a wall-mounted sensor (fig. 1, item 130, optical visual guide; par. 49, sensor may be embedded in guide 130). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claim 14, modified Odaohhara disclose a safety system as in claim 1, but Odaohhara is silent on the particulars of wherein the detection subsystem includes a light sensor.
However, Brown in discussing a method and apparatus for automatic charging of electrically powered vehicle (title) disclose a light sensor (par. 59, sensor may use optics, laser or low-power light signal). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claim 15, modified Odaohhara disclose a safety system as in claim 1, but Odaohhara is silent on wherein the detection subsystem includes a camera.
However, Brown in discussing a method and apparatus for automatic charging of electrically powered vehicle (title) disclose using a camera for detecting (par. 113, sensor may include a camera, CCD, etc.). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claim 16, modified Odaohhara disclose a safety system as in claim 1, but Odaohhara is silent on the particulars of wherein the detection subsystem includes a sensor mounted on a vehicle.
However, Brown in discussing a method and apparatus for automatic charging of electrically powered vehicle (title) disclose a sensor mounted to a vehicle (par. 65, on-board sensor). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claim 19, modified Odaohhara disclose a safety system as in claim 1, Odaohhara further disclose configured to use the detection system for baseline calibration before the charger commences charging (par. 12-13, based on the calculated battery capacity determine whether to charge or not; par. 17-18, based on calculated value or reference value of charging current determine whether to charge).

Regarding claims 20 and 52, modified Odaohhara disclose claims 1 and 49, respectively, Odaohhara further disclose wherein the notification subsystem includes an annunciator/local indicator configured to provide a warning signal in an area proximate to the object (par. 62, provides notification warning signal, such as a beep sound to the user, which implicitly implies that the user in within some area).

Regarding claim 21, modified Odaohhara disclose a safety system as in claim 20, Odaohhara further disclose wherein the warning signal is a visual indication (par. 62, warning signal can be a flashing LED).

Regarding claim 22, modified Odaohhara disclose a safety system as in claim 20, Odaohhara further disclose wherein the warning signal is an aural indication (par. 62, warning signal can be a beep sound).

Regarding claim 23, modified Odaohhara disclose a safety system as in claim 1, Odaohhara further disclose wherein the notification subsystem is configured to provide a remote notification of the object (par. 62, CPU 11 receives the alert to notify the user of the malfunction by displaying on the LCD 18; fig. 1, depicts 10 computer system remote from 52 intelligent battery).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Regarding claims 24 and 53, modified Odaohhara disclose claims 23 and 49, respectively, Odaohhara further disclose the remote notification (par. 62, displaying a malfunction occurrence on the LCD 18, which is remote of from the charger), but is silent on the particulars of an electronically delivered message.
However, Brown in discussing a method and apparatus for automatic charging of electrically powered vehicle (title) disclose an electronic message (par. 40, indication can be in expressed in words, letters, etc. to provide indication to operator). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claim 25, modified Odaohhara disclose a safety system as in claim 1, but Odaohhara is wherein the notification subsystem is enabled upon movement of a vehicle away from the object.
However, the determining of whether is a vehicle is away from or near to an object is known in the art as evidenced by Brown. Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose determining that vehicle is moving away (par. 54, driving away from the apparatus). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claim 31, modified Odaohhara disclose a safety system as in claim 2, Odaohhara further disclose wherein the management subsystem (CPU 61; par. 44) is configured to turn off the charger responsive to detection of the object (par. 44, turning off charger based on the detecting abnormal charging of battery).

Regarding claim 32, modified Odaohhara disclose a safety system as in claim 2, Odaohhara further disclose wherein the management subsystem (CPU 61) is configured to reduce a charging level of the charger responsive to detection of the object (par. 44, based on detecting abnormal charging of battery turn off charger).

Regarding claims 33 and 56, modified Odaohhara disclose claims 2 and 50, respectively, Odaohhara further disclose wherein the management subsystem (CPU 61) is configured to change an operational parameter of the charger responsive to detection of the object (par. 56-57, CPU in intelligent battery uses formulas to determine the operating parameters for the charger; par. 59).

Regarding claim 35, modified Odaohhara disclose a safety system as in claim 1, Odaohhara further disclose wherein the detection subsystem (par. 13, detecting means; par. 43, current detection circuit 64 and voltage detection circuit 63; par. 56, abnormal current detection table 73; fig.5) is integrated into an electronic system (fig. 1, 10, computer system; par. 29-30, electronic system can be a computer, such as a PC), but is silent on the particulars of a vehicle's electronic systems.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose a vehicle electronic system (par. 10, vehicle electrical storage device, battery). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claim 36, modified Odaohhara disclose a safety system as in claim 1, Odaohhara further disclose wherein the notification subsystem (par. 13, notification means; par. 52, notification unit 76) is integrated into an electronic system (fig. 1, 10, computer system; par. 29-30, electronic system can be a computer, such as a PC), but is silent on the particulars of a vehicle's electronic systems.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose a vehicle electronic system (par. 10, vehicle electrical storage device, battery). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claim 37, modified Odaohhara disclose a safety system as in claim 2, Odaohhara further disclose wherein the management subsystem (CPU 61)) is integrated into an electronic system (fig. 1, 10, computer system; par. 29-30, electronic system can be a computer, such as a PC), but is silent on the particulars of a vehicle's electronic systems.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose a vehicle electronic system (par. 10, vehicle electrical storage device, battery). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

Regarding claim 38, modified Odaohhara disclose a safety system as in claim 1, wherein the detection subsystem, but Odaohhara is silent on a magnetometer.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose using a magnet for proper orientation (par. 59; par. 119). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).

InductEV, Inc.
Exhibit 1002
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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Regarding claim 40, modified Odaohhara disclose a safety system as in claim 1,Odaohhara further disclose wherein the detection subsystem (par. 13, detecting means; par. 43, current detection circuit 64 and voltage detection circuit 63; par. 56, abnormal current detection table 73; fig.5) is coupled with a charging subsystem of the charger (par. 12-13, charger for charging battery, implicitly has a charging subsystem), the detection subsystem taking as input operational parameters of the charging subsystem (par. 56-57, CPU in intelligent battery uses formulas to determine the operating parameters for the charger; par. 59), but Odaohhara is silent on determining presence of the object based on the operational parameters of the charging subsystem.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose determining presence of object based on operation parameters of charging system (par. 36, determine operating parameters of vehicle).
Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract -- Brown).

Regarding claim 41, modified Odaohhara disclose a safety system as in claim 2, but Odaohhara is silent on the particulars of wherein the management subsystem includes a surface configured to facilitate movement of the object.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose a surface configured to facilitate movement of an object (par. 77, surface, which is of different orientations, facilitates coupling to vehicle; par. 105-107, surface of ground facilitates movement of vehicle). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract -- Brown).

Regarding claim 42, modified Odaohhara disclose a safety system as in claim 2, but Odaohhara is silent on wherein the management subsystem includes a surface that moves so as to facilitate movement of the object.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose a surface that moves to facilitate movement of an object (par. 60, tracks, ball bearing, jackscrews, etc. provide a method of moving the apparatus, or object). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract -- Brown).

Regarding claim 43, modified Odaohhara disclose a safety system as in claim 2, but Odaohhara is silent on wherein the management subsystem includes a mechanism to sweep the object so as to cause it to move.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose a surface that moves to facilitate movement of an object (par. 46, moves in different directions; par. 60, tracks, ball bearing, jackscrews, etc. provide a method of moving the apparatus, or object). Modified Odaohhara is silent on the particulars of sweeping mechanism.
Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract -- Brown).
Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a sweeping mechanism for moving an object, since this is a well known practice in the art and the particulars are a matter of mere design choice.

Regarding claim 44, modified Odaohhara disclose a safety system as in claim 2, but Odaohhara is silent on wherein the management subsystem includes a mechanism to facilitate movement of the object using magnetism.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose using a magnet for proper orientation (par. 59; par. 119). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract -- Brown).

Regarding claim 46, modified Odaohhara disclose a safety system as in claim 1, Odaohhara further disclose wherein the detection subsystem and the notification subsystem are integrated (fig. 6, depicts the abnormal current detection table 73 integrated with malfunction notification unit 76; par. 51-52, fig. 6 is a block diagram of the intelligent battery which includes current detection table and malfunction notification unit).

Regarding claim 47, modified Odaohhara disclose a safety system as in claim 2, Odaohhara further disclose wherein the detection subsystem and the management subsystem are integrated (fig. 2, depicts CPU 61 and detection circuits 63, 64 within intelligent battery).

Regarding claim 48, modified Odaohhara disclose a safety system as in claim 2, Odaohhara further disclose wherein the notification system (fig. 6, malfunction notification unit 76 is within intelligent battery 52) and the management subsystem are integrated (fig. 2, CPU 61, is within intelligent battery 52).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Claims 3, 7, 26-27, 51, and 54 lack an inventive step under PCT Article 33(3) as being obvious over Odaohhara in view of Brown in further view of Bauerle et al., hereinafter referred to as Bauerle.

Regarding claims 3 and 51, modified Odaohhara disclose claims 1 and 49, respectively, but is Odaohhara is silent on wherein the detection subsystem includes a heat sensor.
However, Bauerle in discussing a system and method for charging a plug-in electric vehicle (title) disclose a heat sensor (par. 14, temperature sensor may sense the temperature of component that exhibits the most heat). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Bauerle with the invention of Odaohhara for the purpose of controlling the charging condition so that the vehicle battery is charged in an optimum fashion.

Regarding claims 7 and 54, modified Odaohhara disclose claims 2 and 50, respectively, but is silent on the particulars of wherein the management subsystem is configured to cool an area associated with the object.
However, determining whether to cool an area associated with an object is a well known practice in the art as evidenced by Bauerle. Bauerle in discussing a system and method for charging a plug-in electric vehicle (title) disclose cooling an area (par. 13, cooling unit 40 to reduce temperature of battery charger; par. 33, cooling unit 40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Bauerle with the invention of Odaohhara for the purpose of controlling the charging condition so that the vehicle battery is charged in an optimum fashion.

Regarding claim 26, modified Odaohhara disclose a safety system as in claim 1, wherein the notification subsystem, but Odaohhara is silent on comprises a plurality of sensors, the notification subsystem being configured to detect presence of the object responsive to differential temperature indications from a subset of the plurality of sensors.
However, Brown in discussing a method and apparatus for automatic charging of an electrically powered vehicle (title) disclose a plurality of sensors (par. 118, different types of sensors); detect presence of object from subset of pluraity of sensors (par. 85, detect the vehicle is within distance of apparatus from sensor). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).
Modified Odaohhara is silent on the particulars of a differential temperature indication. Furthermore, Bauerle in discussing a system and method for charging a plug-in electric vehicle (title) disclose a differential temperature indication (par. 17, temperature sensors are collected to determine the average or collective temperature of entire battery unit, differential temperature). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Bauerle with the invention of Odaohhara for the purpose of controlling the charging condition so that the vehicle battery is charged in an optimum fashion.

Regarding claim 27, modified Odaohhara disclose a safety system as in claim 2, Odaohhara further disclose the management system (CPU 61), but Odaohhara is silent on a coolant dispenser configured to supply a coolant to an area associated with the object responsive to detection of the object.
However, Bauerle in discussing a system and method for charging a plug-in electric vehicle (title) disclose a coolant dispenser configured to supply a coolant to an area in response to a detection of an object (par. 13, cooling unit to reduce temperature of battery; par. 33, cooling unit reduces temperature of battery unit based on detected battery sensor temperatures). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Bauerle with the invention of Odaohhara for the purpose of controlling the charging condition so that the vehicle battery is charged in an optimum fashion.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Claims 5-6 lack an inventive step under PCT Article 33(3) as being obvious over Odaohhara in view of Brown in further view of Nakazawa et al., hereinafter referred to as Nakazawa.

Regarding claim 5, modified Odaohhara disclose a safety system as in claim 1, wherein the detection subsystem, but Odaohhara is silent on the particulars of comprising heat sensitive paint.
However, the use of heat sensitive paint is well known in the art as evidenced by Nakazawa. Nakazawa in discussing a method for discriminating between used and unused gas generators for air bags during car scrapping process (title) disclose using heat sensitive paint (col. 5, lns. 32, heat sensitive paint; col. 5, lns. 66-67, check heat sensitive paints). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Nakazawa with the invention of Odaohhara for the purpose of allowing the vehicle to be readily distinguishable by worker (col. 3, lns. 53-57, Nakazawa).

Regarding claim 6, modified Odaohhara disclose a safety system as in claim 1, wherein the notification subsystem, but Odaohhara is silent on the particulars of comprising heat sensitive paint.
However, the use of heat sensitive paint is well known in the art as evidenced by Nakazawa. Nakazawa in discussing a method for discriminating between used and unused gas generators for air bags during car scrapping process (title) disclose using heat sensitive paint (col. 5, lns. 32, heat sensitive paint; col. 5, lns. 66-67, check heat sensitive paints). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Nakazawa with the invention of Odaohhara for the purpose of allowing the vehicle to be readily distinguishable by worker (col. 3, lns. 53-57, Nakazawa).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Claims 10-12, 17, 34, and 39 lacks an inventive step under PCT Article 33(3) as being obvious over Odaohhara in view of Brown in further view of Kurs et al., hereinafter referred to as Kurs.

Regarding claim 10, modified Odaohhara disclose a safety system as in claim 1, Odaohhara further disclose the charger (par. 12, charger), and the detection subsystem (fig. 2, items 63, 64, detection circuit) , but Odaohhara is silent on charger containing a source resonator and detection subsystem is integrated with the source resonator.
However, the integrating of a source resonator within various devices is well known in the art as evidenced by Kurs. Kurs in discussing wireless energy transfer (title) disclose a source resonator (par. 8, source resonators; par. 13, source resonator; par. 385, source resonator). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the source resonator of Kurs with the charger and detection subsystem of Odaohhara for the purpose of enabling useful energy transfer over greater distances and alignment offsets than those realized with traditional induction schemes, but without the limitations and risks inherent in radioactive transmission schemes (par. 7 – Kurs).

Regarding claim 11, modified Odaohhara disclose a safety system as in claim 1, Odaohhara further disclose the charger (par. 12, charger), and the notification subsystem (par. 13, notification means; par. 52, notification unit 76), but Odaohhara is silent on the charger includes a source resonator, wherein the notification subsystem is integrated with the source resonator.
However, the integrating of a source resonator within various devices is well known in the art as evidenced by Kurs. Kurs in discussing wireless energy transfer (title) disclose a source resonator (par. 8, source resonators; par. 13, source resonator; par. 385, source resonator). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the source resonator of Kurs with the charger and detection subsystem of Odaohhara for the purpose of enabling useful energy transfer over greater distances and alignment offsets than those realized with traditional induction schemes, but without the limitations and risks inherent in radioactive transmission schemes (par. 7 – Kurs).

Regarding claim 12, modified Odaohhara disclose a safety system as in claim 2, Odaohhara further disclose the charger (par. 12, charger), and management subsystem (CPU 61; par. 51-52, based on the CPU 61 it is determined whether to continue or abort operation of charger), but Odaohhara is silent on wherein the charger includes a source resonator, wherein the management subsystem is integrated with the source resonator.
However, the integrating of a source resonator within various devices is well known in the art as evidenced by Kurs. Kurs in discussing wireless energy transfer (title) disclose a source resonator (par. 8, source resonators; par. 13, source resonator; par. 385, source resonator). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the source resonator of Kurs with the charger and detection subsystem of Odaohhara for the purpose of enabling useful energy transfer over greater distances and alignment offsets than those realized with traditional induction schemes, but without the limitations and risks inherent in radioactive transmission schemes (par. 7 – Kurs).

Regarding claim 17, modified Odaohhara disclose a safety system as in claim 1,but Odaohhara is silent on wherein the detection subsystem includes a sensor integrated with a device resonator of a vehicle.
However, Brown in discussing a method and apparatus for automatic charging of electrically powered vehicle (title) disclose a sensor using a resonator (par. 80,vehicle has a receiver responsive to a resonant induction to improve power transfer) of a vehicle (par. 85, on-board sensor that detects within some distance of charging). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Brown with the invention of Odaohhara for the purpose of providing an automatic method of charging an electrically powered vehicle (abstract – Brown).
Modified Odaohhara is silent on the particulars of a sensor integrated with a device resonator. Kurs in discussing a wireless energy transfer system (title) disclose a sensor integrated with a device resonator (par. 475, sensor is powered with device resonator). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the source resonator of Kurs with the charger and detection subsystem of Odaohhara for the purpose of enabling useful energy transfer over greater distances and alignment offsets than those realized with traditional induction schemes, but without the limitations and risks inherent in radioactive transmission schemes (par. 7 – Kurs).

Regarding claim 34, modified Odaohhara disclose a safety system as in claim 33, Odaohhara further disclose wherein the operational parameter (par. 56-57, formulas are used to determine parameters; par. 59), but Odaohhara is silent on relating to selection of a subset of plural resonators.
However, the use of resonators is well known in the art as determined by Kurs. Kurs in discussing a wireless energy transfer (title) disclose parameters relating to a selection of resonators (par. 70, magnetic resonator with tunable impedance network….may be adjusted in response to data measured by port parameters; par. 122; par. 128-129). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the source resonator of Kurs with the charger and detection subsystem of Odaohhara for the purpose of enabling useful energy transfer over greater distances and alignment offsets than those realized with traditional induction schemes, but without the limitations and risks inherent in radioactive transmission schemes (par. 7 – Kurs).

Regarding claim 39, modified Odaohhara disclose a safety system as in claim 1, wherein the detection subsystem (par. 13, detecting means; par. 43, current detection circuit 64 and voltage detection circuit 63; par. 56, abnormal current detection table 73; fig.5), but Odaohhara is silent on includes a magnetometer integrated with a resonator.
However, Kurs in discussing a wireless energy transfer (title) disclose a magnetometer integrated with a resonator (par. 165-170, magnetic resonators). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the source resonator of Kurs with the charger and detection subsystem of Odaohhara for the purpose of enabling useful energy transfer over greater distances and alignment offsets than those realized with traditional induction schemes, but without the limitations and risks inherent in radioactive transmission schemes (par. 7 – Kurs).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Claim 18 lacks an inventive step under PCT Article 33(3) as being obvious over Odaohhara in view of Brown in further view of Flaugher.

Regarding claim 18, modified Odaohhara disclose a safety system as in claim 1, but Odaohhara is silent on wherein the detection subsystem includes an ambient sensor not significantly responsive to whether the object is hot, the detection subsystem configured to use output from the ambient sensor for calibration.
However, Flaugher in discussing battery chargers and methods for extended battery life (title) disclose an ambient sensor not significantly responsive to whether an object is hot (par. 10-11, monitor ambient temperature of batteries based on time period; par. 41, ambient temperature monitors temp of batteries or battery environment; par. 50, measure ambient temperature at or near battery), use output from an ambient sensor for calibration (par. 10-11, based on ambient temperature determine best time for charging battery; fig. 5, item 520; par. 68). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Flaugher with the invention of Odaohhara for the purpose of reducing the heat which causes faster electrolyte dry out and faster positive grid growth, par. 5-6, Flaugher).

Claims 28-30 lack an inventive step under PCT Article 33(3) as being obvious over Odaohhara in view of Brown in further view of Bauerle in view of Kurs et al., hereinafter referred to as Kurs.

Regarding claim 28, modified Odaohhara disclose a safety system as in claim 27, but Odaohhara is silent on wherein the coolant dispenser is further configured to provide movement of debris.
However, Bauerle in discussing a system and method for charging a plug-in electric vehicle (title) disclose a coolant dispenser (par. 13, cooling unit 40 to reduce temperature of battery; par. 33, cooling unit reduces temperature of battery unit based on detected battery sensor temperatures). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Bauerle with the invention of Odaohhara for the purpose of controlling the charging condition so that the vehicle battery is charged in an optimum fashion.
Modified Odaohhara is silent on the providing movement of debris. Furthermore, moving debris is a well known practice in the art as evidenced by Kurs. Kurs in discussing a wireless energy transfer system (title) disclose removing debris (par. 491, preventing debris accumulation). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the source resonator of Kurs with the charger and detection subsystem of Odaohhara for the purpose of enabling useful energy transfer over greater distances and alignment offsets than those realized with traditional induction schemes, but without the limitations and risks inherent in radioactive transmission schemes (par. 7 – Kurs).

Regarding claim 29, modified Odaohhara disclose a safety system as in claim 27, but Odaohhara is silent on wherein the coolant dispenser is further configured to move the object.
However, Bauerle in discussing a system and method for charging a plug-in electric vehicle (title) disclose a coolant dispenser (par. 13, cooling unit 40 to reduce temperature of battery; par. 33, cooling unit reduces temperature of battery unit based on detected battery sensor temperatures). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Bauerle with the invention of Odaohhara for the purpose of controlling the charging condition so that the vehicle battery is charged in an optimum fashion.
Furthermore, Kurs in discussing a wireless energy transfer system (title) disclose moving an object (par. 504, moving an object to provide for optimal power transmission). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the source resonator of Kurs with the charger and detection subsystem of Odaohhara for the purpose of enabling useful energy transfer over greater distances and alignment offsets than those realized with traditional induction schemes, but without the limitations and risks inherent in radioactive transmission schemes (par. 7 – Kurs).

Regarding claim 30, modified Odaohhara disclose a safety system as in claim 27, but Odaohhara is silent on wherein the coolant dispenser is integrated with a source resonator of the charger.
However, Bauerle in discussing a system and method for charging a plug-in electric vehicle (title) disclose a coolant dispenser integrated within a charger (par. 11, cooling unit 40 is within battery charger 14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Bauerle with the invention of Odaohhara for the purpose of controlling the charging condition so that the vehicle battery is charged in an optimum fashion.
Modified Odaohhara is silent on the particulars of a coolant dispenser being integrated with a source resonator. Furthermore, the integrating of a source resonator within various devices is well known in the art as evidenced by Kurs. Kurs in discussing wireless energy transfer (title) disclose a source resonator (par. 8, source resonators; par. 13, source resonator; par. 385, source resonator). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the source resonator of Kurs with the charger and detection subsystem of Odaohhara for the purpose of enabling useful energy transfer over greater distances and alignment offsets than those realized with traditional induction schemes, but without the limitations and risks inherent in radioactive transmission schemes (par. 7 – Kurs).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Claim 45 lacks an inventive step under PCT Article 33(3) as being obvious over Odaohhara in view of Brown in further view of Nilson et al., hereinafter referred to as Nilson.

Regarding claim 45, modified Odaohhara disclose a safety system as in claim 2, but Odaohhara is silent on wherein the management subsystem includes a drain configured for fluid handling proximate to the object.
However, the draining of fluids is notoriously well known in the art as evidenced by Nilson. Nilson in discussing a battery charging assembly for use on a locomotive (title) disclose a drain configured for fluid handling (par. 24, drain valve for oil). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Nilson with the invention of Odaohhara for the purpose of providing a battery charging assembly which provides an electrical power output which is operable to, on the one hand, maintain the electrical charge of batteries, which are utilized on the locomotive, and further, can be employed to energize electrical devices for remotely controlling the operation of the locomotive (par. 1- Nilson).

Claims 1-56 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

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Search History:

Limited Classification Search

The Patent Analyst performed a limited classification search within the following US, IPC, ECLA, or F-Term classification areas:

U.S. Class/Subclass(es): 180/65.29; 307/104; 320/108, 109, 149, 152

IPC (8) Class/Subclass(es): B60L 11/18; B60Q 1/52; G01R 31/36; H02J 7/00, 7/02; H04B 5/00; H04M 10/44 (2012.01)

See Global Search Results.

Global Patent Literature Text Search

The Patent Analyst performed the following global text search, which was not limited by classification but may or may not have been limited by other criteria:

PATBASE http://patbase.com/default.asp?nsessionlog=on

- 1) pn=us2010/0277121 (1)
- 2) pn=us2011/0074346 (1)
- 3) pd<20101006 (100000)
- 4) ctb 2 (216)
- 5) 4 and 3 (208)
- 6) 5 and (wireless w3 power) (119)
- 7) 6 and (notif* and indic*) (10)
- 8) PN=(US2010248622 OR US2009286504 OR US2010235006 OR WO10051477 OR US2010109445) (5)
- 9) pn=(us20100156355 or us20020167294) (2)
- 10) (heat w3 paint*) (3904)
- 11) (heat sensitive paint) (100)
- 12) 11 and (wireless power) (1)
- 13) 11 and (detection system) (1)
- 14) 11 and sensor (19)
- 15) pn=us2011/0025264 (1)
- 16) pn=us20070024246 (1)
- 17) (vehicle) and (debris or trash or refuse or garbage) and (cool*) and (drain*) (2842)
- 18) 17 and (remov* w2 (debris or trash or garbage or refuse)) (863)
- 19) 18 and (wireless power) (0)
- 20) 18 and (sensor*) (526)
- 21) 20 and charger (6)
- 22) 18 and charger (11)
- 23) pn=us20060214626 (1)

- 24) IC=("H02J7/02") (10705)
- 25) IC=("H04B5/00") (8781)
- 26) IC=("B60L11/18") (14183)
- 27) IC=("B60Q1/52") (4853)
- 28) IC=("H01M10/44") (18655)
- 29) IC=("H02J7/00") (51447)
- 30) IC=("G01R31/36") (14225)
- 31) IC=("G01R31/36") (14225)
- 32) 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 (96682)
- 33) 32 and 3 (83829)
- 34) 33 and (wireless w3 (power or energy)) (752)
- 35) 34 and (vehicle or car or automobile) (201)
- 36) 35 and (sensor* or detector*) (117)
- 37) 36 and charger (53)
- 38) UC=("320/109") (483)
- 39) UC=("307/104") (1331)
- 40) UC=("320/108") (672)
- 41) UC=("180/65.29") (462)
- 42) UC=("320/149") (312)
- 43) UC=("320/152") (285)
- 44) 38 or 39 or 40 or 41 or 42 or 43 (3314)
- 45) 44 and 3 (2773)
- 46) 45 and charger (984)
- 47) 46 and (sensor* or detector*) (506)
- 48) 47 and (vehicle or car or automobile) (296)
- 49) 48 and (heat or hot or temperat*) w2 (sens*) (121)
- 50) 49 and (fluid or drain) (27)

GOOGLE PATENT http://www.google.com/advanced_patent_search

No. of Hits	Text String
11900	wireless energy distribution system
90	wireless energy distribution system "paint"
24	wireless energy distribution system "paint" resonator
14	wireless vehicle charger paint
791	VEHICLE CHARGER SAFETY SYSTEM AND METHOD
15,300	(detection system) (notification system) (wireless power)
444	monitoring system battery-charger heat-sensor (wireless power) ambient

Computer Accessed Text Databases Searched

The Patent Analyst searched the following computer accessed text databases:

Database: Google Scholar http://scholar.google.com/schhp?hl=en&as_sdt=0,23

No. of Hits	Text String
402	wireless energy distribution system "paint" resonator
10,800	VEHICLE CHARGER SAFETY SYSTEM AND METHOD
30,100	(detection system) (notification system) (wireless power)
12	monitoring system battery-charger heat-sensor (wireless power) ambient

Date search was completed: 12 January 2012

ED/JM

80157. E29W01

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
JOHN H. NORTRUP
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 14 MAY 2010
Applicant's or agent's file reference WTCY0014PWO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US 10/24199	International filing date *(day/month/year)* 13 February 2010 (13.02.2010)
Applicant WITRICITY CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 8270

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference WTCY0014PWO	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US 10/24199	International filing date *(day/month/year)* 13 February 2010 (13.02.2010)	(Earliest) Priority Date *(day/month/year)* 13 February 2009 (13.02.2009)
Applicant WITRICITY CORPORATION		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the **language**, the international search was carried out 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)).
   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,
   a. the figure of the **drawings** to be published with the abstract is Figure No. 1
      ☒ as suggested by the applicant.
      ☐ as selected by this Authority, because the applicant failed to suggest a figure.
      ☐ as selected by this Authority, because this figure better characterizes the invention.
   b. ☐ none of the figures is to be published with the abstract.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 10/24199

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H01F 27/42 (2010.01)
USPC - 307/104
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8): H01F 27/42 (2010.01)
USPC: 307/104

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8): H01F 27/42 (2010.01) (text search)
USPC: 307/104; 340/855.8 (text search)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (PGPB, USPT, EPAB, JPAB); Google Patent; Google Scholar: Search Terms: wireless power transmission coil magnetic field capacitive coupling dielectric ring electric conductive wire loop wireless resonant ferromagnetic medium contact-less power frequency amplitude

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2007/0222542 A1 (Joannopoulos) 27 September 2007 (27.09.2007), entire document, especially; para. [0001] through [0045], Fig. 1-6B	1-11, 16-26, 31 --- 12-15, 27-30
X --- Y	US 2008/0012569 A1 (Hall et al.) 17 January 2008 (17.01.2008), entire document, especially; para. [0034] through [0055], Fig. 1-14	32, 33 --- 14, 15, 29, 30
Y	US 2008/0030415 A1 (Homan et al.) 07 February 2008 (07.02.2008), para. [0005], [0042] through [0073], Fig. 9, 10	12, 13, 27, 28
A	US 2008/0278264 A1 (Karalis et al.) 13 November 2008 (13.11.2008), entire document	1 - 33
A	US 2009/0015075 A1 (Cook et al.) 15 January 2009 (15.01.2009), entire document	1 - 33

☐ Further documents are listed in the continuation of Box C. ☐

* 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 application or patent 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

Date of the actual completion of the international search	Date of mailing of the international search report
03 May 2010 (03.05.2010)	14 MAY 2010
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: JOHN H. NORTRUP
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	14 MAY 2010
Applicant's or agent's file reference WTCY0014PWO	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 10/24199	13 February 2010 (13.02.2010)	13 February 2009 (13.02.2009)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H01F 27/42 (2010.01)
USPC - 307/104

Applicant WITRICITY CORPORATION

1. This opinion contains indications relating to the following items:

- [X] 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
- [X] Box No. V Reasoned statement under Rule 43*bis*.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 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	03 May 2010 (03.05.2010)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 10/24199

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 INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 10/24199

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	12-15, 27-30	YES
	Claims	1-11, 16-26, 31-33	NO
Inventive step (IS)	Claims	None.	YES
	Claims	1 - 33	NO
Industrial applicability (IA)	Claims	1 - 33	YES
	Claims	None.	NO

2. Citations and explanations:

Claims 1-11, 16-26 and 31 lack novelty under PCT Article 33(2) as being anticipated by US 2007/0222542 A1 (Joannopoulos).

Regarding claim 1, Joannopoulos discloses a wireless power transfer system (source 1 and device 2; loop 10, loop 12, of N coils of radius r of conducting wire with circular cross-section, para. [0015], [0024], [0025], [0028], Fig. 1, 3) comprising: at least one source magnetic resonator (source 1; loop 10, para. [0015], [0024], [0025], [0028], Fig. 1, 3) comprising a capacitively-loaded conducting loop (capacitively-loaded conducting-wire loop, para. [0019], [0025], Fig. 3) coupled to a power source (external power supply, para. [0005], [0006]) and configured to generate an oscillating magnetic field (long-lived oscillatory resonant electromagnetic modes, resonant frequency/Omega, para. [0002], [0013], [024], [0025], [0026], [0031]); and at least one device magnetic resonator (device 2; loop 12, para. [0015], [0024], [0025], [0028], Fig. 1, 3), distal from said source resonators (distances D, para. [0034], Fig. 1, 3), comprising a capacitively-loaded conducting loop (capacitively-loaded conducting-wire loop, para. [0019], [0025], Fig. 3) configured to convert said oscillating magnetic fields into electrical energy (para. [0012], Fig. 6A, 6B); wherein at least one said resonator has a keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) around the resonator that surrounds the resonator with a layer of non-lossy material (air, para. [0017], [0018], [0020], [0024], [0025], [0032], [0037], Fig. 2A, 2B).

Regarding claim 2, Joannopoulos discloses the system of claim 1, wherein the keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) extends at a symmetric distance around the resonator (air, supports high-Q whispering-gallery modes, para. [0008], [0017], [0018], [0020], Fig. 2A).

Regarding claim 3, Joannopoulos discloses the system of claim 1, wherein the keep-out zone (near field, para. [0014], [0018], [0021], [0026], [0027]) extends at a asymmetric distance around the resonator (air, supports high-Q whispering-gallery modes, dielectric waveguides, can support guided modes, para. [0008], [0017], [0018], [0020], [0024], Fig. 2B).

Regarding claim 4, Joannopoulos discloses the system of claim 3, wherein the keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) is largest around regions of the resonator where the electric fields are the largest (proximal cavity 20, para. [0008], [0020], [0024], Fig. 2B)

Regarding claim 5, Joannopoulos discloses the system of claim 1, wherein the smallest keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 0.25 mm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 6, Joannopoulos discloses the system of claim 1, wherein the smallest keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 1 cm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 7, Joannopoulos discloses the system of claim 1, wherein the smallest keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 10 cm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 8, Joannopoulos discloses the system of claim 1, wherein the smallest keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) is approximately 1.0 per-cent of the characteristic size of the resonator (characteristic size L.sub.1, L.sub.2; distance between the two resonators can be larger than the characteristic size of each resonator; D/r; rough estimate in the microwave, one can use one coil (N=1) of copper wire and then for r=1 cm and .alpha.=1 mm, appropriate for example for a cell phone; r=30 cm for a laptop or a household robot; for r=1 m source loop on a room ceiling; r=30 cm and .alpha.=2 mm for a laptop or a household robot, para. [0005], [0016], [0027], [0028]).

Continued in supplemental boxes.

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

V.2. Citations and explanations:

Regarding claim 9, Joannopoulos discloses the system of claim 1, wherein the smallest keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) is approximately 0.1 per-cent of the characteristic size of the resonator (characteristic size L.sub.1, L.sub.2; distance between the two resonators can be larger than the characteristic size of each resonator; D/r; rough estimate in the microwave, one can use one coil (N=1) of copper wire and then for r=1 cm and .alpha.=1 mm, appropriate for example for a cell phone; r=30 cm for a laptop or a household robot; for r=1 m source loop on a room ceiling; r=30 cm and .alpha.=2 mm for a laptop or a household robot, para. [0005], [0016], [0027], [0028]).

Regarding claim 10, Joannopoulos discloses the system of claim 1, wherein the magnetic resonator further comprises a magnetic material (metallodielectric photonic crystals, para. [0022]).

Regarding claim 11, Joannopoulos discloses the system of claim 1, wherein at least one magnetic resonator has an intrinsic Q greater than 100 (Q.sub.rad = 1988, 1258, 702, 226; Q.sub.abs = 312530, 86980, 21864, 1662, para. [0034]).

Regarding claim 16, Joannopoulos discloses the system of claim 10, wherein at least one magnetic resonator is located inside a living creature (human, para. [0012], [0032], [0038] through [0041]).

Regarding claim 17, Joannopoulos discloses a method for wireless power transfer (source 1 and device 2; loop 10, loop 12, of N coils of radius r of conducting wire with circular cross-section, para. [0015], [0024], [0025], [0028], Fig. 1, 3) comprising: energizing at least one source magnetic resonator (source 1; loop 10, para. [0015], [0024], [0025], [0028], Fig. 1, 3) comprising a capacitively-loaded conducting loop (capacitively-loaded conducting-wire loop, para. [0019], [0025], Fig. 3) to generate an oscillating magnetic field (long-lived oscillatory resonant electromagnetic modes, resonant frequency/Omega, para. [0002], [0013], [024], [0025], [0026], [0031]); and providing at least one device magnetic resonator (device 2; loop 12, para. [0015], [0024], [0025], [0028], Fig. 1, 3), distal from said source resonators (distances D, para. [0034], Fig. 1, 3), comprising a capacitively-loaded conducting loop (capacitively-loaded conducting-wire loop, para. [0019], [0025], Fig. 3) configured to convert said oscillating magnetic fields into electrical energy (para. [0012], Fig. 6A, 6B); maintaining a keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) around at least one resonator to maintain a separation distance between the resonator and lossy material of the environment (background dielectric (free space/air, para. [0024], [0025]).

Regarding claim 18, Joannopoulos discloses the method of claim 17, wherein the keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) extends at a symmetric distance around the resonator (air, supports high-Q whispering-gallery modes, para. [0008], [0017], [0018], [0020], Fig. 2A).

Regarding claim 19, Joannopoulos discloses the method of claim 17, wherein the keep-out zone (near field, para. [0014], [0018], [0021], [0026], [0027]) extends at an asymmetric distance around the resonator (air, supports high-Q whispering-gallery modes, dielectric waveguides, can support guided modes, para. [0008], [0017], [0018], [0020], [0024], Fig. 2B).

Regarding claim 20, Joannopoulos discloses the method of claim 17, wherein the smallest keep out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 0.25 mm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 21, Joannopoulos discloses the method of claim 17, wherein the smallest keep out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 1 cm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 22, Joannopoulos discloses the method of claim 17, wherein the smallest keep out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 10 cm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 23, Joannopoulos discloses the method of claim 17, wherein the smallest keep out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) is approximately 1.0 per-cent of the characteristic size of the resonator (characteristic size L.sub.1, L.sub.2; distance between the two resonators can be larger than the characteristic size of each resonator; D/r; rough estimate in the microwave, one can use one coil (N=1) of copper wire and then for r=1 cm and .alpha.=1 mm, appropriate for example for a cell phone; r=30 cm for a laptop or a household robot; for r=1 m source loop on a room ceiling; r=30 cm and .alpha.=2 mm for a laptop or a household robot, para. [0005], [0016], [0027], [0028]).

See Continuation sheet.

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
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V.2. Citations and explanations:

Regarding claim 24, Joannopoulos discloses the method of claim 17, wherein the smallest keep out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) is approximately 0.1 per-cent of the characteristic size of the resonator (characteristic size L.sub.1, L.sub.2; distance between the two resonators can be larger than the characteristic size of each resonator; D/r; rough estimate in the microwave, one can use one coil (N=1) of copper wire and then for r=1 cm and .alpha.=1 mm, appropriate for example for a cell phone; r=30 cm for a laptop or a household robot; for r=1 m source loop on a room ceiling; r=30 cm and .alpha.=2 mm for a laptop or a household robot, para. [0005], [0016], [0027], [0028]).

Regarding claim 25, Joannopoulos discloses the method of claim 17, wherein the magnetic resonator further comprises a magnetic material (metallodielectric photonic crystals, para. [0022]).

Regarding claim 26, Joannopoulos discloses the method of claim 17, wherein at least one magnetic resonator has an intrinsic Q greater than 100 (Q.sub.rad = 1988, 1258, 702, 226; Q.sub.abs = 312530, 86980, 21864, 1662, para. [0034]).

Regarding claim 31, Joannopoulos discloses the method of claim 26, wherein at least one magnetic resonator is located inside a living creature (human, para. [0012], [0032], [0038] through [0041]).

Claims 32 and 33 lack novelty under PCT Article 33(2) as being anticipated by US 2008/0012569 A1 to Hall et al. (hereinafter 'Hall').

Regarding claim 32, Hall discloses a source for wireless power transfer in a shaft (component 200, para. [0041], Fig. 3, 3A) comprising a capacitively-loaded conducting loop (coil 303, comprise between 5 and 40 wire strands 602 and between 1 and 15 coil turns para. [0041], [0042], [0043], Fig. 7, 8) wrapped around a core of magnetic material (magnetic coupler 302 also comprises a coil 303 and an annular trough 404 made of magnetic material, para. [0042], [0043], [0045], Fig. 5, 6) and coupled to a power source (first coupler 304 may be optimized for the transfer of power; electronic device 210 is a power source 1301, para. [0041], [0049]) and configured to generate an oscillating magnetic field (magnetic coupler and the adjacent magnetic coupler may then be adapted to induce magnetic fields in each other when their coils are electrically energized; inductive couplers 302, 1102 may act as band pass filters due to their inherent inductance, capacitance and resistance such that a first frequency is allowed to pass at a first resonant frequency, and a second frequency is allowed to pass at a second resonant frequency, para. [0014], [0046], [0047]); wherein the conducting loops are oriented to be coaxial with length of the shaft (pin end 203 of downhole component 200, para. [0041], Fig.3).

Regarding claim 33, Hall discloses the source of claim 32, further comprising a plurality of capacitively-loaded conducting loops (magnetic coupler 302 comprises a coil 303 having a plurality of windings 601 of wire strands 602, para. [0043], Fig. 6) wrapped around cores of magnetic material (annular trough 404 made of magnetic material, para. [0042], [0043], [0045], Fig. 5, 6) arranged around the diameter of the shaft (pin end 203 of downhole component 200, para. [0041], Fig.3).

Claims 12, 13, 27 and 28 lack an inventive step under PCT Article 33(3) as being obvious over Joannopoulos, in view of US 2008/0030415 A1 to Homan et al. (hereinafter 'Homan').

Regarding claim 12, Joannopoulos discloses the system of claim 10, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the magnetic resonator is immersed in water. Homan discloses a magnetic resonator (axial or tilted coil or antenna; toroidal strip 1200, para. [0042], [0043], [0073], Fig. 9, 10) immersed in water (water; electrical conductivity (or its inverse, resistivity) is an important property of subsurface formations in geological surveys and in prospecting for oil, gas, and water, para. [0005], [0073]). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the dielectric medium application of Homan, since such a combination would result in a down hole system with greater accuracy. (Homan: para. [0005]).

Regarding claim 13, Joannopoulos discloses the system of claim 10, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is immersed in oil. Homan discloses a magnetic resonator (axial or tilted coil or antenna; toroidal strip 1200, para. [0042], [0043], [0073], Fig. 9, 10) immersed in oil (oil; electrical conductivity (or its inverse, resistivity) is an important property of subsurface formations in geological surveys and in prospecting for oil, gas, and water, para. [0005], [0073]). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the dielectric medium application of Homan, since such a combination would result in a down hole system with greater accuracy. (Homan: para. [0005]).

Regarding claim 27, Joannopoulos discloses the method of claim 26, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the magnetic resonator is immersed in water. Homan discloses a magnetic resonator (axial or tilted coil or antenna; toroidal strip 1200, para. [0042], [0043], [0073], Fig. 9, 10) immersed in water (water; electrical conductivity (or its inverse, resistivity) is an important property of subsurface formations in geological surveys and in prospecting for oil, gas, and water, para. [0005], [0073]). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the dielectric medium application of Homan, since such a combination would result in a down hole system with greater accuracy. (Homan: para. [0005]).

See Continuation sheet.

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V.2. Citations and explanations:

Regarding claim 28, Joannopoulos discloses the method of claim 26, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is immersed in oil. Homan discloses a magnetic resonator (axial or tilted coil or antenna; toroidal strip 1200, para. [0042], [0043], [0073], Fig. 9, 10) immersed in oil (oil; electrical conductivity (or its inverse, resistivity) is an important property of subsurface formations in geological surveys and in prospecting for oil, gas, and water, para. [0005], [0073]). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the dielectric medium application of Homan, since such a combination would result in a down hole system with greater accuracy. (Homan: para. [0005]).

Claims 14, 15, 29 and 30 lack an inventive step under PCT Article 33(3) as being obvious over Joannopoulos, in view of Hall.

Regarding claim 14, Joannopoulos discloses the system of claim 10, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is immersed in earthen materials. Hall discloses a source for wireless power transfer in a shaft (component 200, para. [0041], Fig. 3, 3A) comprising a magnetic resonator (coil 303, comprise between 5 and 40 wire strands 602 and between 1 and 15 coil turns para. [0041], [0042], [0043], Fig. 7, 8) immersed in earthen materials (formation 18, para. [0043], Fig. 1). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the earthen material application of Hall, since such a combination would result in a down hole system with greater power efficiency. (Hall: para. [0048]).

Regarding claim 15, Joannopoulos discloses the system of claim 10, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is located in a well. Hall discloses a source for wireless power transfer in a shaft (component 200, para. [0041], Fig. 3, 3A) comprising a magnetic resonator (coil 303, comprise between 5 and 40 wire strands 602 and between 1 and 15 coil turns para. [0041], [0042], [0043], Fig. 7, 8) immersed in well (formation 18 to form a borehole 20, para. [0043], Fig. 1). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the well application of Hall, since such a combination would result in a down hole system with greater power efficiency. (Hall: para. [0048]).

Regarding claim 29, Joannopoulos discloses the method of claim 26, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is immersed in earthen materials. Hall discloses a source for wireless power transfer in a shaft (component 200, para. [0041], Fig. 3, 3A) comprising a magnetic resonator (coil 303, comprise between 5 and 40 wire strands 602 and between 1 and 15 coil turns para. [0041], [0042], [0043], Fig. 7, 8) immersed in earthen materials (formation 18, para. [0043], Fig. 1). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the earthen material application of Hall, since such a combination would result in a down hole system with greater power efficiency. (Hall: para. [0048]).

Regarding claim 30, Joannopoulos discloses the method of claim 26, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is located in a well. Hall discloses a source for wireless power transfer in a shaft (component 200, para. [0041], Fig. 3, 3A) comprising a magnetic resonator (coil 303, comprise between 5 and 40 wire strands 602 and between 1 and 15 coil turns para. [0041], [0042], [0043], Fig. 7, 8) immersed in well (formation 18 to form a borehole 20, para. [0043], Fig. 1). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the well application of Hall, since such a combination would result in a down hole system with greater power efficiency. (Hall: para. [0048]).

Claims 1 - 33 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annex B).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, International Phase, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet or sheets containing a complete set of claims in replacement of all the claims previously filed must be submitted.

Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively in Arabic numerals (Section 205(a)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

InductEV, Inc.
Exhibit 1002
Page 653

SEQUENCE LISTINGS AND TABLES RELATED THERETO IN INTERNATIONAL APPLICATIONS FILED IN THE U.S. RECEIVING OFFICE

The Administrative Instructions (AIs) under the Patent Cooperation Treaty (PCT), in force as of **July 1, 2009**, contain important changes relating to the manner of filing, and applicable fees for, sequence listings and/or tables related thereto (sequence-related tables) in international applications. The complete text may be accessed at http://www.wipo.int/pct/en/texts/index.htm.

Effective July 1, 2009, Part 8 and Annex C-*bis* will no longer form part of the AIs. Part 8 was introduced in 2001 as a temporary solution to problems arising from the filing of very large sequence listings on paper and provided for a *sequence listing forming part of the international application* to be filed in electronic form on physical medium (*e.g.*, CD), together with the remainder of the application on paper. In 2002, Part 8 was expanded to include sequence-related tables and Annex C-*bis* was added to provide technical requirements. All applicants may now file complete international applications in electronic form, eliminating the need for these temporary provisions.

I. AIS PART 8 AND ANNEX C-*BIS DELETED AS OF JULY 1, 2009*

A) **Sequence-related tables cannot be filed as a separate part of the description or in text format.** They must be provided as an integral part of the international application either:
- in PDF format as part of an international application filed in electronic form via EFS-Web; or
- on paper as part of an international application filed on paper.

B) A ***sequence listing forming part of an international application*** may be provided either:
- in electronic form, as part of an international application filed in electronic form via EFS-Web, in
  - Annex C/ST.25 text format (preferred), or
  - PDF format; or
- on paper as part of an international application filed on paper.

C) A ***sequence listing not forming part of the international application*** **(for search under PCT Rule 13*ter*) in Annex C/ST.25 text format**
- is not required where the *sequence listing forming part of the international application* was filed in Annex C/ST.25 text format as part of an international application filed in electronic form via EFS-Web
- is required for search where the *sequence listing forming part of the international application* was filed in PDF
- is required for search on physical medium (*e.g.*, CD) where the *sequence listing forming part of the international application* was filed on paper as part of an international application filed on paper.

II. CALCULATION OF THE INTERNATIONAL FILING FEE AND FEE REDUCTION UNDER AI § 707

A) **A sequence-related table** must form an integral part of the international application and will incur FULL page fees with no upper limit.

B) A ***sequence listing forming part of an international application*** filed:
- via EFS-Web in Annex C/ST.25 text format will incur NO page fees;
- on paper or in PDF format will incur FULL page fees with no upper limit.

III. AVAILABILITY OF SEQUENCE LISTINGS SUBMITTED FOR SEARCH UNDER PCT RULE *13TER*

International Searching Authorities will be required to transmit to the International Bureau a copy of an Annex C/ST.25 text format sequence listing provided for search under PCT Rule 13*ter*. Any such sequence listing will be made available on PATENTSCOPE® (*sequence listings forming part of the international application* are already available).

IV. JULY 2009 REQUEST (PCT/RO/101)

The Request now has two options for the last sheet: one for paper filings; and one for EFS-Web filings. The July 2009 Request may be accessed at http://www.wipo.int/pct/en/forms/index.htm.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
JOHN H. NORTRUP
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)*
Applicant's or agent's file reference WTCY0014PWO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US 10/24199	International filing date *(day/month/year)* 13 February 2010 (13.02.2010)
Applicant WITRICITY CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 8270

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

CPA GLOBAL
MAY 17 2010
RECEIVED
Corbeo Verified

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

P80157.V01W01

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: JOHN NORTRUP
STRATEGIC PATENTS, P.C.
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 05 JUL 2011
Applicant's or agent's file reference WTCY0053PWO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2011/027868	International filing date *(day/month/year)* 10 March 2011
Applicant WITRICITY CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

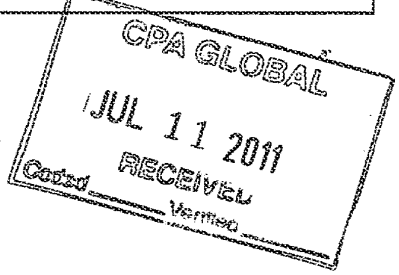
   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)



PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: JOHN NORTRUP
STRATEGIC PATENTS, P.C.
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing *(day/month/year)*	05 JUL 2011
Applicant's or agent's file reference WTCY0053PWO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2011/027868	International filing date *(day/month/year)* 10 March 2011
Applicant WITRICITY CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300
Facsimile No. 571-273-3201	Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference WTCY0053PWO	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2011/027868	International filing date *(day/month/year)* 10 March 2011	(Earliest) Priority Date *(day/month/year)* 10 March 2010
Applicant WITRICITY CORPORATION		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out 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)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 1

   ☒ as suggested by the applicant.

   ☐ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

InductEV, Inc.
Exhibit 1002
Page 658

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/027868

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H04B 5/00 (2011.01)
USPC - 307/104
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - H04B 5/00; H01F 38/00; H02J 17/00; H01P 7/00, 7/06 (2011.01)
USPC - 307/104, 333/219, 230; 455/41.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
MicroPatent, Questel Orbit, USPTO EAST System (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT), Google Patent

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US 2009/0085408 A1 (BRUHN) 02 April 2009 (02.04.2009) entire document	1-4, 11-12, 14-15, 17 ---- 5-10, 13, 16, 18-19
Y	US 2009/0243397 A1 (COOK et al) 01 October 2009 (01.10.2009) entire document	5, 8-10, 16, 18
Y	US 2007/0021140 A1 (KEYES, IV et al) 25 January 2007 (25.01.2007) entire document	6-7
Y	US 2008/0266748 A1 (LEE) 30 October 2008 (30.10.2008) entire document	13, 19
A	US 2008/0036588 A1 (IVERSON et al) 14 February 2008 (14.02.2008) entire document	20-25
A	US 6,664,770 B1 (BARTELS) 16 December 2003 (16.12.2003) entire document	1-25
A	US 2004/0000974 A1 (ODENAAL et al) 01 January 2004 (01.01.2004) entire document	1-25

☐ Further documents are listed in the continuation of Box C. ☐

* 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 application or patent 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

Date of the actual completion of the international search	Date of mailing of the international search report
27 June 2011	05 JUL 2011
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: JOHN NORTRUP
STRATEGIC PATENTS, P.C.
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	05 JUL 2011
Applicant's or agent's file reference WTCY0053PWO	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2011/027868	10 March 2011	10 March 2010

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H04B 5/00 (2011.01)
USPC - 307/104

Applicant WITRICITY CORPORATION

1. This opinion contains indications relating to the following items:

- [X] 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
- [X] Box No. V Reasoned statement under Rule 43*bis*.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 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	27 June 2011	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2011/027868

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:

InductEV, Inc.
Exhibit 1002
Page 661

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2011/027868

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	3, 5-10, 13, 16, 18-19	YES
	Claims	1-2, 4, 11-12, 14-15, 17	NO
Inventive step (IS)	Claims	20-25	YES
	Claims	1-19	NO
Industrial applicability (IA)	Claims	1-25	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-2, 4, 11-12, 14-15, 17 lack novelty under PCT Article 33(2) as being anticipated by Bruhn.

Regarding claim 1, Bruhn discloses a wireless power converter (apparatus for wireless energy transmission, para 0017, Fig. 9) comprising at least one receiving magnetic resonator 130, 132 configured to capture electrical energy received wirelessly (resonator is "electrically isolated", i.e. galvanically isolated from the primary and secondary circuits, Fig. 9, para 0034) through a first oscillating magnetic field (developed by generator 16 and primary winding 18, Fig. 9, para 0034) characterized by a first plurality of parameters (operating at the fundamental frequency, para 0017, 0031, Fig. 9); and at least one transferring magnetic resonator 126, 128 (Fig. 9) configured to generate (through resonance, para 0017-0018, Fig. 9) a second oscillating magnetic field (transferred to the secondary winding 20, para 0017-0018, 0031, Fig. 9) characterized by a second plurality of parameters different from the first plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018), wherein the electrical energy from the at least one receiving magnetic resonator 130, 132 is used to energize the at least one transferring magnetic resonator 126, 128 (Fig. 9) to generate the second oscillating magnetic field (energy coupling is present between the first and second magnetic resonators when they are arranged in the near field, as they are here: the free-space wavelength at even the 60th harmonic of the shortest wavelength contemplated (at 5 MHz) would be 1 meter, such that the spacing here would be understood to be "sub-wavelength" or "near-field", para 0018, Fig. 9).

Regarding claim 2, Bruhn discloses wherein the first plurality of parameters includes a first frequency (operating at the fundamental frequency, para 0017, 0031, Fig. 9) different from a second frequency of the second plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018).

Regarding claim 4, Bruhn discloses wherein the second frequency is approximately an integer multiple of the first frequency (second resonator has twice the resonant frequency of first resonator, para 0018).

Regarding claim 11, Bruhn discloses wherein the at least one receiving magnetic resonator 130, 132 is configurable to capture energy from magnetic fields with different parameters (resonator 130 can receive energies with different frequencies, para 0017-0018, 0040, Fig. 9).

Regarding claim 12, Bruhn discloses wherein the at least one transferring magnetic resonator 126, 128 is configurable to generate magnetic fields with different parameters (resonator 126 can generate and transmit energy with different frequencies, para 0017-0018, 0040, Fig. 9).

Regarding claim 14, Bruhn discloses a system (para 0017, 0043) comprising a source resonator 126, 128 configured to generate a first oscillating magnetic field (transferred to the secondary winding 20, para 0017-0018, 0031, Fig. 9) characterized by a first plurality of parameters (operating at the fundamental frequency, para 0017, 0031, Fig. 9); a device resonator 130, 132 configured to capture electrical energy received wirelessly (resonator is "electrically isolated", i.e. galvanically isolated from the primary and secondary circuits, Fig. 9, para 0034) through a second oscillating magnetic field (developed by generator 16 and primary winding 18, Fig. 9, para 0034) characterized by a second plurality of parameters different from the first plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018); and a wireless power converter (apparatus for wireless energy transmission, para 0017, Fig. 9) including conversion circuitry (circuits as seen in Fig. 9) configured to capture energy from the second oscillating magnetic field (developed by generator 16 and primary winding 18, Fig. 9, para 0034) and to energize the source resonator 126, 128 to generate the first oscillating magnetic field (transferred to the secondary winding 20, energy coupling is present between the first and second magnetic resonators when they are arranged in the near field, as they are here: the free-space wavelength at even the 60th harmonic of the shortest wavelength contemplated (at 5 MHz) would be 1 meter, such that the spacing here would be understood to be "sub-wavelength" or "near-field", para 0017-0018, 0031, Fig. 9).

Regarding claim 15, Bruhn discloses wherein the first plurality of parameters (operating at the fundamental frequency, para 0017, 0031, Fig. 9) and the second plurality of parameters are different in at least a frequency (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Regarding claim 17, Bruhn discloses wherein the wireless power converter (apparatus for wireless energy transmission, para 0017, Fig. 9) is powered by electrical energy captured by the device resonator 130, 132 (transferred to the secondary winding 20, energy coupling is present between the first and second magnetic resonators when they are arranged in the near field, as they are here: the free-space wavelength at even the 60th harmonic of the shortest wavelength contemplated (at 5 MHz) would be 1 meter, such that the spacing here would be understood to be "sub-wavelength" or "near-field", para 0017-0018, 0031, Fig. 9).

Claim 3 lacks an inventive step under PCT Article 33(3) as being obvious over Bruhn.

Regarding claim 3, Bruhn discloses the invention above, the invention above, and discloses a first frequency (operating at the fundamental frequency, para 0017, 0031, Fig. 9) and a second frequency (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018), but does not disclose wherein the first frequency is approximately an integer multiple of the second frequency. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a first frequency that is approximately an integer multiple of the second frequency, in order to provide a system that can handle different power levels for providing wireless energy to multiple devices, and because discovering the optimal value of a result effective variable involves only routine skill in the art.

Claims 5, 8-10, 16, 18 lack an inventive step under PCT Article 33(3) as being obvious over Bruhn in view of Cook et al. (hereinafter referred to as Cook).

Regarding claim 5, Bruhn discloses the invention above, but does not specifically disclose wherein the first plurality of parameters includes a first magnitude different from a second magnitude of the second plurality of parameters. Cook is in the field of wireless power systems (para 0044) and teaches wherein the first plurality of parameters includes a first magnitude different from a second magnitude of the second plurality of parameters (transmit power converter unit converts the supply voltage and frequency, such as 110V/60Hz, into another voltage [different voltage] and into another frequency, such as under 50Hz, that is more appropriate for wireless transmission, para 0155-0158). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the different magnitudes as taught in Cook with the invention of Bruhn in order to provide an efficient power transfer system to charge electronic devices (see Cook, para 0017, 0042).

Regarding claim 8, Bruhn discloses the invention above, and further discloses electrical energy captured by the at least one receiving magnetic resonator 130 (resonator 130 captures energy developed by generator 16 and primary winding 18, Fig. 9, para 0034), but does not specifically disclose a first converter circuit configured to convert the electrical energy into a direct current signal. Cook teaches a first converter circuit 1550 configured to convert the electrical energy into a direct current signal (a DC/DC or DC/AC converter 1550 converts the electrical energy received by resonator antenna into direct current, para 0194-0195, Fig. 15). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the direct current conversion as taught in Cook with the invention of Bruhn in order to provide an efficient power transfer system to charge electronic devices (see Cook, para 0017, 0042).

Regarding claim 9, Bruhn discloses the invention above, and further discloses wherein the alternating current signal (power source 16 provides AC current signal, Fig. 9, para 0040) is used to energize the at least one transferring magnetic resonator 126, 128 (energy coupling is present between the first and second magnetic resonators when they are arranged in the near field, as they are here: the free-space wavelength at even the 60th harmonic of the shortest wavelength contemplated (at 5 MHz) would be 1 meter, such that the spacing here would be understood to be "sub-wavelength" or "near-field", para 0018, Fig. 9), but does not disclose a second converter circuit configured to convert the direct current signal from the first converter circuit into an alternating current signal. Cook teaches a second converter circuit (two converter circuits for converting current signals, para 0194-0195, as shown in Fig. 15) configured to convert the direct current signal from the first converter circuit into an alternating current signal (a DC/DC or DC/AC converter 1550 can convert the electrical energy received by resonator antenna into alternating current, para 0194-0195, Fig. 15). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the direct current conversion as taught in Cook with the invention of Bruhn in order to provide an efficient power transfer system to charge electronic devices (see Cook, para 0017, 0042).

Regarding claim 10, Bruhn discloses the invention above, and further discloses at least one receiving magnetic resonator 130, 132 (resonator is "electrically isolated", i.e. galvanically isolated from the primary and secondary circuits, Fig. 9, para 0034) and at least one transferring magnetic resonator 126, 128 (Fig. 9), but does not disclose wherein at least one of the resonators has a quality factor Q>100. Cook teaches a resonator with a quality factor Q>100 (magnetic resonant antennas used in system must provide a Q-factor as high as possible, and can provide Q-factors up to 300, para 0060-0061). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the high quality factor resonator as taught in Cook with the invention of Bruhn in order to provide a very efficient wireless power transmission system with minimal power losses (see Cook, para 0047).

Regarding claim 16, Bruhn discloses the invention above, but does not specifically disclose wherein the first plurality of parameters and the second plurality of parameters of the oscillating magnetic fields are different in at least a magnitude. Cook teaches wherein the first plurality of parameters and the second plurality of parameters of the oscillating magnetic fields are different in at least a magnitude (transmit power converter unit converts the supply voltage and frequency, such as 110V/60Hz, into another voltage [different voltage] and into another frequency, such as under 50Hz, that is more appropriate for wireless transmission, para 0155-0158). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the different magnitudes as taught in Cook with the invention of Bruhn in order to provide an efficient power transfer system to charge electronic devices (see Cook, para 0017, 0042).

InductEV, Inc.
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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Regarding claim 18, Bruhn discloses the invention above, and further discloses the source resonator 126, 128 and the device resonator 130, 132 (Fig. 9), but does not disclose wherein at least one of the resonators has a quality factor Q>100. Cook teaches a resonator with a quality factor Q>100 (magnetic resonant antennas used in system must provide a Q-factor as high as possible, and can provide Q-factors up to 300, para 0060-0061). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the high quality factor resonator as taught in Cook with the invention of Bruhn in order to provide a very efficient wireless power transmission system with minimal power losses (see Cook, para 0047).

Claims 6-7 lack an inventive step under PCT Article 33(3) as being obvious over Bruhn in view of Keyes, IV et al. (hereinafter referred to as Keyes).

Regarding claim 6, Bruhn discloses the invention above, and discloses wherein the first plurality of parameters includes a first frequency (operating at the fundamental frequency, para 0017, 0031, Fig. 9) different from a second frequency of the second plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018), but does not disclose a frequency hopping sequence. Keyes is in the field of wireless energy transfer systems (para 0008-0009, Fig. 43), and teaches a frequency hopping sequence (power transmitted wirelessly using frequency hopping technique, para 0056-0058). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the frequency hopping sequence as taught in Keyes with the invention of Bruhn in order to avoid wireless interference (see Keyes, para 0056).

Regarding claim 7, Bruhn discloses the invention above, and discloses wherein the first plurality of parameters (operating at the fundamental frequency, para 0017, 0031, Fig. 9) includes a sequence different from a second sequence of the second plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018), but does not disclose an on/off sequence. Keyes teaches an on/off sequence (wireless reception of on or off control commands for wireless base units, para 0094). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the on/off sequence as taught in Keyes with the invention of Bruhn in order to provide a method of wirelessly powering devices on and off (see Keyes, para 0007-0008).

Claims 13, 19 lack an inventive step under PCT Article 33(3) as being obvious over Bruhn in view of Lee.

Regarding claim 13, Bruhn discloses the invention above, and discloses a loop inductor 130 (Fig. 9), but does not disclose wherein the at least one receiving magnetic resonator and the at least one transferring resonator share a loop inductor. Lee is in the field of wireless power converters (para 0001) and teaches wherein the at least one receiving magnetic resonator and the at least one transferring resonator share a loop inductor (transmitter and receiver are combined, para 0048, and constructed by winding transmission coil outputting power generated from electromagnetic wave generating source, para 0051, Fig. 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the shared loop as taught in Lee with the invention of Bruhn to provide a more efficient wireless power system for transferring power by maximizing generation and reception of electromagnetic waves in the resonance circuit (see Lee, para 0051).

Regarding claim 19, Bruhn discloses the invention above, and discloses a loop inductor 130 (Fig. 9), but does not disclose wherein the source resonator and the device resonator include a shared loop inductor. Lee teaches wherein the at least one receiving magnetic resonator and the at least one transferring resonator share a loop inductor (transmitter and receiver are combined, para 0048, and constructed by winding transmission coil outputting power generated from electromagnetic wave generating source, para 0051, Fig. 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the shared loop as taught in Lee with the invention of Bruhn to provide a more efficient wireless power system for transferring power by maximizing generation and reception of electromagnetic waves in the resonance circuit (see Lee, para 0051).

Claims 20-25 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest:

Regarding claim 20, a method of wireless power conversion comprising: providing a configurable magnetic resonator; tuning the configurable magnetic resonator to capture a first oscillating magnetic field characterized by a first plurality of parameters; converting the oscillating magnetic field into electrical energy; storing the electrical energy as stored energy in an energy storage element; tuning the configurable magnetic resonator to generate a second oscillating magnetic field characterized by a second plurality of parameters; and energizing the configurable magnetic resonator using the stored energy to produce the second oscillating magnetic field.

Claims 21-25 meet the criteria due to their dependence on novel claim 20.

The prior art, as shown below, details some aspects of the invention, however, none of the prior art teaches all the missing limitations either alone or in combination as specified.

InductEV, Inc.
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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: JOHN MONOCELLO III
GTC LAW GROUP LLP & AFFILIATES
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing *(day/month/year)*	06 JAN 2012
Applicant's or agent's file reference: WTCY-0048-PWO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No.: PCT/US2011/051634	International filing date *(day/month/year)*: 14 September 2011
Applicant: WITRICITY CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)

CPA GLOBAL
JAN 09 2012
RECEIVED
Coded _____ Verified _____

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: JOHN MONOCELLO III
GTC LAW GROUP LLP & AFFILIATES
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 06 JAN 2012
Applicant's or agent's file reference WTCY-0048-PWO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2011/051634	International filing date *(day/month/year)* 14 September 2011
Applicant WITRICITY CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference WTCY-0048-PWO	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2011/051634	International filing date *(day/month/year)* 14 September 2011	(Earliest) Priority Date *(day/month/year)* 14 September 2010
Applicant WITRICITY CORPORATION		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out 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)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 30

   ☒ as suggested by the applicant.

   ☐ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/051634

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H02J 17/00 (2011.01)
USPC - 307/104
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - H01F 27/42; H01F 38/00, 38/14; H01P 7/08; H02J 7/02; H02J 17/00 (2011.01)
USPC - 307/104; 320/108, 109; 333/219, 219.2; 336/92

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase, Google Scholar, Google Patents

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2010/0181843 A1 (SCHATZ et al) 22 July 2010 (22.07.2010) entire document	1-27
Y	US 2009/0134712 A1 (COOK et al) 28 May 2009 (28.05.2009) entire document	1-27
A	US 2008/0211320 A1 (COOK et al) 04 September 2008 (04.09.2008) entire document	1-27
A	US 2010/0109445 A1 (KURS et al) 06 May 2010 (06.05.2010) entire document	1-27

☐ Further documents are listed in the continuation of Box C. ☐

* 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 application or patent 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

Date of the actual completion of the international search	Date of mailing of the international search report
22 December 2011	06 JAN 2012
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: JOHN MONOCELLO III
GTC LAW GROUP LLP & AFFILIATES
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	06 JAN 2012
Applicant's or agent's file reference WTCY-0048-PWO	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2011/051634	14 September 2011	14 September 2010

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H02J 17/00 (2011.01)
USPC - 307/104

Applicant WITRICITY CORPORATION

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 43*bis*.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 66.1*bis*(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/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	22 December 2011	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2011/051634

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:

InductEV, Inc.
Exhibit 1002
Page 670

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2011/051634

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-27	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-27	NO
Industrial applicability (IA)	Claims	1-27	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-27 lack an inventive step under PCT Article 33(3) as being obvious over Schatz et al., hereinafter referred to as Schatz, in view of Cook et al., hereinafter referred to as Cook.

Regarding claim 1, Schatz disclose a system (par. 10, system) for wireless energy distribution over a defined area (par. 9, wireless energy transfer scheme the is capable of transmitting power over mid-range distance; abstract, wireless power transfer within refrigerator; par. 645-646, wireless power transfer system integrated in the refrigerator door), the system (par. 10, system) comprising: a source resonator (par. 10, source resonator) coupled to an energy source (par. 10, resonator connected to power source) and generating an oscillating magnetic field with a frequency (par. 23, generate an oscillating magnetic field; par. 29-30, generating magnetic field with resonant frequency), at least one repeater resonator (par. 14, designed as repeater resonators; par. 141, multiple resonators daisy chained together) in proximity to the source resonator (par. 141, resonators maybe positioned in daisy chain fashion for exchanging energy from source in particular area); and at least two other repeater resonators (par. 14, designed as repeater resonators, which plurality implies multiple or at least two; par. 396, multiple repeaters; par. 141, multiple resonators daisy chained together) in proximity to at least one of the repeater resonators (par. 141, multiple resonators are daisy chained together, which implies in proximity to one another), wherein the repeater resonators provide an effective wireless energy transfer area (par. 141-142, repeater resonators transfer energy over a distances; par. 646-647, additional resonators within the refrigerator provide for wireless energy transfer within the area), but is silent on the particulars of at least one repeater positioned in a defined area and in proximity to the source, and having a resonant frequency; and at least two other repeater with a resonant frequency positioned in the defined area and in proximity to at least one of the repeater resonators, wherein the repeater resonators provide an effective wireless energy transfer area at least one of within or equal to the defined area.
However, Cook in discussing wireless power range increase using parasitic antennas (title) disclose at least one repeater (120, parasitic antenna; par. 28, parasitic antenna that re-radiates) positioned in a defined area (par. 23, antennas are positioned within a room) and in proximity to a source (100, main antenna; fig. 1, depicts 120 in proximity to 100), and having a resonant frequency (par. 26, antenna 100 having a resonant frequency); and at least two repeaters (120, 130) positioned in a defined area (par. 23, antennas are positioned within a room) and in proximity to at least one of a repeater resonators (fig. 1, depicts 120 and 130 within proximity of each other), wherein a repeater provides an effective wireless energy transfer area at least one of within or equal to the defined area (par. 29-32, parasitic antennas 120, 130 transmit within area). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Cook with the invention of Schatz for the purpose of providing a local areas where power is more efficiently received (abstract – Cook) .

Regarding claim 2, modified Schatz disclose the system of claim 1, Schatz further disclose wherein the defined area covered is at least 2 square meters (par. 483, the defined area could be a floor, which inherently is greater in size that 2 square meters).

Regarding claim 3, modified Schatz disclose the system of claim 1, Schatz further disclose wherein the defined area covered is at least 10 square centimeters (par. 646, the defined area is refrigerator, which inherently is greater in size than 10 centimeters).

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Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

Regarding claim 4, modified Schatz disclose the system of claim 1, Schatz further disclose comprising at least one additional source resonator (par. 519, utilize source resonators; par. 600, source resonators; par. 646, another source resonator) that generates an oscillating magnetic field with the frequency (par. 23, generating an oscillating magnetic field; par. 113, inherently a resonator oscillates with a frequency), wherein the at least one additional source resonator is positioned in proximity to defined area (par. 646, additional source resonator can be integrated into the body of the refrigerator; par. 519, source resonators that are arranged in various configurations within an area).

Regarding claim 5, modified Schatz disclose the system of claim 4, Schatz further disclose wherein the frequency and relative phase of the oscillating fields generated by the sources of the system are synchronized (par. 594, oscillating magnetic fields of resonators are driven in-phase).

Regarding claim 6, modified Schatz disclose the system of claim 4, Schatz further disclose wherein the relative phase of the oscillating fields generated by the different sources of the system is adjustable (par. 594, oscillating field of multiple resonators can be adjusted either in-phase or out of phase).

Regarding claim 7, modified Schatz disclose the system of claim 4, Schatz further disclose wherein at least one repeater resonator, comprises a capacitively loaded conducting loop (par. 166, capacitively-loaded loop inductor; par. 179, capacitively-loaded conductive loops).

Regarding claim 8, modified Schatz disclose the system of claim 4, Schatz further disclose wherein at least one of the repeater resonators have an adjustable resonant frequency (par. 113, angular resonant frequency, varies based on resonant period; par. 173, resonant frequency of the resonator is tunable by changing the inductance or capacitor of the resonator).

Regarding claim 9, modified Schatz disclose the system of claim 8, Schatz further disclose wherein the resonant frequency of the repeater resonators may be detuned from the frequency of the magnetic fields generated by the source resonators to change the distribution of the magnetic fields in the defined area (par. 593, resonators may be detuned from other resonators).

Regarding claim 10, modified Schatz disclose the system of claim 9, Schatz further disclose wherein some repeaters are detuned to maximize the magnetic fields in a region of the defined area (par. 593-594, detuned resonators in order to create specific hotspot areas of concentrated magnetic energy).

Regarding claim 11, modified Schatz disclose the system of claim 10, Schatz further disclose wherein the detuning of repeaters is performed according to a network routing algorithm (par.593-597, detuning performed based on the drive signal to appropriately tune the resonator as it is activated in the bank, adjustments are also made based on a sharing algorithm; par. 387, power levels, frequencies and input impedances for resonators may be adjusted based on algorithm; par. 403, processor adjusts the resonator through algorithms).

Regarding claim 12, modified Schatz disclose the system of claim 10, Schatz further disclose comprising a communication channel (4204, wireless communication channel) between the resonators of the system (par. 431, wireless communication channel may allow resonators 102 to exchange information).

Regarding claim 13, modified Schatz disclose the system of claim 12, Schatz further disclose wherein the communication channel is used to coordinate detuning of the repeater resonators of the system to achieve a specific magnetic field distribution (par. 431-433, communication channel communicates controls to the resonator, which could include detuning of the resonator to achieve specific distribution).

Regarding claim 14, modified Schatz disclose the system of claim 1, Schatz further disclose wherein the repeater resonators have a quality factor Q>100 (par. 19, Q sub1 and sub2 are greater than 100; par. 26, resonator with quality factor Q greater than one hundred; par. 235, quality factor, Q, of 100 or higher and even Q of 1000 or higher; par. 239, quality factor, Q, of order of 1000 or higher).

Regarding claim 15, modified Schatz disclose the system of claim 10, modified Schatz further disclose wherein the repeater resonators further comprise pressure sensors (par. 533, pressure sensors) and wherein the information from the pressure sensors is used to change the magnetic field distribution (par. 533-534, information from sensors, such as pressure sensors, help to optimize magnetic field direction and resonator alignment).

Regarding claim 16, modified Schatz disclose the system of claim 1, wherein the defined area is a floor (par. 17, applications could include under the floor; par. 232-233, active area on the floor).

Regarding claim 17, modified Schatz disclose the system of claim 16, wherein the resonators are integrated into flooring material (par. 233, integrated into a floor).

Regarding claim 18, modified Schatz disclose the system of claim 1, modified Schatz further disclose wherein the defined area is a wall (par. 17, applications could include in the walls of a room; par. 232, walls).

Regarding claim 19, modified Schatz disclose the system of claim 1, Schatz further disclose wherein the defined area is a ceiling (par. 17, applications could include on the ceiling; par. 232, ceilings).

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

Regarding claim 20, Schatz disclose a wireless energy transfer flooring system (par. 483, wireless energy transfer may be integrated into the floor) comprising: at least one source resonator (par. 10, source resonator) coupled to an energy source (par. 10, resonator connected to power source) and generating an oscillating magnetic field with a frequency (par. 23, generate an oscillating magnetic field; par. 29-30, generating magnetic field with resonant frequency), at least one repeater resonator (par. 14, designed as repeater resonators; par. 141, multiple resonators daisy chained together) in proximity to the source resonator (par. 141, resonators maybe positioned in daisy chain fashion for exchanging energy from source in particular area); and at least two other repeater resonators (par. 14, designed as repeater resonators, which plurality implies multiple or at least two; par. 396, multiple repeaters; par. 141, multiple resonators daisy chained together) in proximity to at least one of the repeater resonators (par. 141, multiple resonators are daisy chained together, which implies in proximity to one another), wherein the resonant frequency of at least one of resonators is detuned from the frequency of the oscillating magnetic field of the at least one source to change the distribution of magnetic fields in the defined area (par. 589, in order to maximize distribution of magnetic fields around source operating parameters of resonators is adjusted, which implies detuned), but is silent on the particulars of at least one repeater positioned in a defined area and in proximity to the source, and having a resonant frequency; and at least two other repeater with a resonant frequency positioned in the defined area and in proximity to at least one of the repeater resonators, wherein the resonant frequency of at least one of the repeater resonators is detuned from the frequency of the oscillating magnetic field of the at least one source to change the distribution of magnetic fields in the defined area.
However, Cook in discussing wireless power range increase using parasitic antennas (title) disclose at least one repeater (120, parasitic antenna; par. 28, parasitic antenna that re-radiates) positioned in a defined area (par. 23, antennas are positioned within a room) and in proximity to a source (100, main antenna; fig. 1, depicts 120 in proximity to 100), and having a resonant frequency (par. 26, antenna 100 having a resonant frequency); and at least two repeaters (120, 130) positioned in a defined area (par. 23, antennas are positioned within a room) and in proximity to at least one of a repeater resonators (fig. 1, depicts 120 and 130 within proximity of each other), wherein the resonant frequency of at least one of the repeaters is detuned from a frequency of an oscillating magnetic field of a source (par. 68, detuning of resonant frequency of antennas, including parasitic antenna; par. 78, detuning of antenna to influence resonant frequency).
Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Cook with the invention of Schatz for the purpose of providing a local areas where power is more efficiently received (abstract – Cook) .

Regarding claim 21, modified Schatz disclose the system of claim 20, Schatz further disclose comprising a communication channel (4204, wireless communication channel) between the resonators of the system (par. 431, wireless communication channel may allow resonators 102 to exchange information).

Regarding claim 22, modified Schatz disclose the system of claim 21, Schatz further disclose wherein the communication channel is used to coordinate detuning of the repeater resonators of the system to achieve a specific magnetic field distribution (par. 431-433, communication channel communicates controls to the resonator, which could include detuning of the resonator to achieve specific distribution).

Regarding claim 23, modified Schatz disclose the system of claim 20, Schatz further disclose wherein the resonators are integrated into flooring material (par. 233, resonators maybe integrated into a floor).

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Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

Regarding claim 24, Schatz disclose a method of distributing wireless energy from at least one source resonator to a specific location within an area (abstract, source resonator distributing wireless energy to a refrigerator) having tunable repeater resonators (par. 20, resonators are tunable), the method comprising: determining a closest resonator to a specific location (par. 533, based on position and location information finding a nearby wireless power transmission source); tuning the resonant frequency of the repeater resonators to provide for an energy transfer path from the source (par. 538, the frequency is tuned to resonant frequency in order in order to transmit wireless power; par. 582-583, the source and device resonators are adjusted as move closer to each other), but is silent on determining a closest repeater resonators, and tuning the resonant frequency of the repeater resonators to provide for an energy transfer path to the closest repeater resonators.
However, Cook in discussing wireless power range increase using parasitic antennas (title) disclose determining a closest repeater (par. 28-30, parasitic antennas radiate within certain area based on location; fig. 1, depicts receivers 125-128 receiving power from there respective antennas), and tuning the resonant frequency of a repeater to provide for an energy transfer path to closest repeater (par. 26, parasitic, repeaters, are tuned to create areas of maximum power). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the aforementioned improvements of Cook with the invention of Schatz for the purpose of providing a local areas where power is more efficiently received (abstract – Cook) .

Regarding claim 25, modified Schatz disclose the method of claim 24, Schatz further disclose comprising detuning resonators (par. 250, detuning resonators; par. 593, detune resonators) that are not in the energy transfer path (par. 593, detune non-active resonators, which implies those not in energy path).

Regarding claim 26, modified Schatz disclose the method of claim 24, Schatz further disclose wherein the energy transfer path is determined by a shortest path algorithm (par. 582, close to each other, power transfer efficiency; par. 596, devices are powered by resonators which are closer to them).

Regarding claim 27, modified Schatz disclose the method of claim 24, wherein the energy transfer path is determined by a central control (par. 533, central station or database is in communication with source, which guides the user to the source; par. 537, central authority authenticates sources and devices).

Claims 1-27 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

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Search History:

Limited Classification Search

The Patent Analyst performed a limited classification search within the following US, IPC, ECLA, or F-Term classification areas:

U.S. Class/Subclass(es): 307/104; 320/108, 109; 333/219, 219.2; 336/92

IPC (8) Class/Subclass(es): H01F 27/42; H01F 38/00, 38/14; H01P 7/08; H02J 7/02; H02J 17/00 (2011.01)

See Global Search Results.

Global Patent Literature Text Search

The Patent Analyst performed the following global text search, which was not limited by classification but may or may not have been limited by other criteria:

PATBASE

- 1) pn=(us20100181843 or us20100109445) (1)
- 2) (PA=(witricity corp)) (2)
- 3) (TAC=((wireless energy) or (wireless power))) (1512)
- 4) (TAC=((wireless energy) or (wireless power)) and defined w2 area) (3)
- 5) PN=(US2008278264 OR WO10093964) (2)
- 6) ctb 2 or ctf 2 (230)
- 7) pn=us2010/0259108 (1)
- 8) PA=(LOU_HERBERT_T OR LOU_HERBERT_TOBY OR FELDSTEIN_MICHAEL_A OR SCHATZ_DAVID_A OR GANEM_STEVEN_J OR GANEM_STEVEN_JOSEPH OR GILER_ERIC_R OR PERGAL_FRANK_J OR KURS_ANDRE_B OR CAMPANELLA_ANDREW_J OR EFE_VOLKAN OR SOLJACIC_MARIN OR FIORELLO_RON OR LI_QIANG OR HALL_KATHERINE_L OR KESLER_MORRIS_P OR KARALIS_ARISTEIDIS OR KULIKOWSKI_KONRAD OR KULIKOWSKI_KONRAD_J OR MACDONALD_MATTHEW_J) (472)
- 9) 8 and 3 (4)
- 10) (((wireless energy) or (wireless power))) and 8 (4)
- 11) 3 and (repeater w3 reson*) (10)
- 12) pd<20100914 (100000)
- 13) 11 and 12 (8)
- 14) 3 and 12 (966)
- 15) 14 and (resonator*) (60)
- 16) IC=("H01F27/42") (1671)
- 17) IC=("H01F38/00") (11012)
- 18) IC=("H01F38/14") (3896)
- 19) IC=("H01P7/08") (1831)
- 20) IC=("H02J17/00") (6354)
- 21) IC=("H02J7/02") (10622)
- 22) 16 or 17 or 18 or 19 or 20 or 21 (33311)
- 23) 22 and (repeat* w2 resonat*) (6)
- 24) 22 and (relay* w2 reson*) (11)
- 25) (repeat* w2 resona*) or (relay* w2 resona*) (767)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Morris P. Kesler et al.	Examiner:	Hal Ira Kaplan
Serial No.:	12/567,716	Group Art Unit:	2836
Filed:	September 25, 2009	Docket:	WTCY-0026-P01
Title:	WIRELESS ENERGY TRANSFER SYSTEMS		

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Pursuant to the requirements of 37 C.F.R. § 1.97(c)(2), Applicant hereby submits this Supplemental Information Disclosure Statement which includes completed Form(s) PTO/SB/08a.

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Supplemental Information Disclosure Statement be entered and the documents listed on the attached Form(s) PTO/SB/08a be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the PTO/SB/08a form(s), initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Further, Applicants respectfully direct the Examiner's attention to the below-listed related applications. These items, which refer to applications that, at this time and according to each application's current prosecution history, may be related to the prosecution of the present case. Applicants' reference to the co-pending applications is not an admission of the materiality of any application or the prosecution history thereof, nor is it an admission that any of the below co-pending applications constitute prior art.

Application Ser. No.	Filing Date:	Attorney Docket No.
12639718	2009-12-16	WTCY-0026-P06
12639489	2009-12-16	WTCY-0028-P01
13555807	2012-07-23	WTCY-0034-P02
13589992	2012-08-20	WTCY-0034-P03
PCT/US12/47844	2012-07-23	WTCY-0034-PWO
13369104	2012-02-08	WTCY-0037-P04
13530280	2012-06-22	WTCY-0038-P03
PCT/US12/40184	2012-05-31	WTCY-0046-PWO
13232868	2001-09-14	WTCY-0048-P01
13536435	2012-06-28	WTCY-0057-P01
13603002	2012-09-04	WTCY-0057-P02
13544688	2012-07-09	WTCY-0058-P01
13567893	2012-08-06	WTCY-0061-P01
PCT/US12/49777	2012-08-06	WTCY-0061-PWO
13278993	2011-10-21	WTCY-0068-P01
13278998	2011-10-21	WTCY-0068-P02
13279007	2011-10-21	WTCY-0068-P03
13279014	2011-10-21	WTCY-0068-P04
13279023	2011-10-21	WTCY-0068-P05
13290983	2011-11-07	WTCY-0068-P06
13290994	2011-11-07	WTCY-0068-P07

13291000	2011-11-07	WTCY-0068-P08
13283811	2011-10-28	WTCY-0069-P01
13283822	2011-10-28	WTCY-0069-P02
13283833	2011-10-28	WTCY-0069-P03
13283839	2011-10-28	WTCY-0069-P04
13283854	2011-10-28	WTCY-0069-P05
13291032	2011-11-07	WTCY-0069-P06
13291052	2011-11-07	WTCY-0069-P07
13292035	2011-11-08	WTCY-0069-P08
13292040	2011-11-08	WTCY-0069-P09
13292044	2011-11-08	WTCY-0069-P10
13292048	2011-11-08	WTCY-0069-P11
13534966	2012-06-27	WTCY-0076-P01
13562528	2012-07-31	WTCY-0077-P01
13562553	2012-07-31	WTCY-0078-P01
13102498	2011-05-06	MIT-0002-U01-C01-C25

Pursuant to 37 C.F.R. §1.97(c)(2), Applicants have included the fee of $180.00 as set forth in 37 C.F.R. §1.17(p). Applicants hereby authorize the Commissioner to charge any additional fees, or to credit any overage, to Deposit Account 50-3912.

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Respectfully submitted,

MORRIS P. KESLER ET AL.

By their Representatives,

Customer No. 87084

Date September 11, 2012

By /John A. Monocello, III/
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Electronic Acknowledgement Receipt

EFS ID:	13715328
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	87084
Filer:	John A. Monocello/Kelly Smith
Filer Authorized By:	John A. Monocello
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	11-SEP-2012
Filing Date:	25-SEP-2009
Time Stamp:	17:40:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	5163
Deposit Account	503912
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Transmittal Letter	WTCY-0026-P01_SIDS_Coverletter.pdf	109843 4d73c41447b4d694c5c6f3f365e2e5d771950e1a	no	4
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	WTCY-0026-P01_SIDS.pdf	618707 decd9ac502a5e812260e0b45cdfa613453805bef	no	21
Warnings:					
Information:					
3	Foreign Reference	CN102239633A.pdf	8217388 405df4c7eecfd8e58145dbbc43e80174a597f307	no	123
Warnings:					
Information:					
4	Foreign Reference	EP2340611A1.pdf	233773 64ddc7e32059a0726019d6f5965cfc0ae3d21606	no	2
Warnings:					
Information:					
5	Foreign Reference	EP2396796A1.pdf	236262 4fbc4c31ff691683fd704b09f33e46bbfb50ef63	no	2
Warnings:					
Information:					
6	Foreign Reference	IN1734KOLNP2011.pdf	133447 0643b50fd90c7182247e2221377a16616efc6d68	no	1
Warnings:					
Information:					
7	Foreign Reference	JP02097005.pdf	604537 082a34c0ce1696734d3ac08c81a57726a92d6bb1	no	5
Warnings:					
Information:					
8	Foreign Reference	JP2012504387.pdf	11042377 a4bb6b42864879e89b0fdfc314c9843c0c8a5c62	no	128
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Information:					
9	Foreign Reference	WO2006011769A1.pdf	1107290 ad758441aaf73a1e8d855b82c08b745eef21d14a	no	25
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Information:					

10	Foreign Reference	WO11112795.pdf	8842895 ff93fde2e5685968a48896e098caee21029969cd	no	176
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Information:					
11	Foreign Reference	WO2012037279A1.pdf	5118770 4c69bf78fa2392ff2f379c3cd7e43da39daffc45	no	105
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Information:					
12	Foreign Reference	WO2011062827A2.pdf	1090536 216c4e24b3aabeeb9c14bbed66fd479e47998dfa	no	28
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13	Foreign Reference	JP11-188113.pdf	563252 3ded78dee1cafacfd6e1c796491741dd6cd4e170	no	8
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Information:					
14	Non Patent Literature	PCTUS2011027868-ISR_WO.pdf	8798492 885d38792211ca48dc862c2a72cf0589052d391c	no	9
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15	Non Patent Literature	PCTUS2009058499_IPRP.pdf	252262 a25ac1fe1a93d455f5142371ab86a51434c14992	no	5
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16	Non Patent Literature	PCTUS2010024199_ISR_WO.pdf	844718 1311c82e5cf24b05e0d830a49d0d980f4f5c30fa	no	12
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17	Non Patent Literature	PCTUS2011051634_ISR_WO.pdf	623851 6ca907b41b87381269ea43d030446bb73361a5ff	no	11
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18	Non Patent Literature	PCTUS2011054544_ISR_WO.pdf	1018460 549fcb43414b7fe2588526866ed195613671b140	no	17
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19	Non Patent Literature	Kurs_OptimizedDesignOfALowResistanceElectricalConductor.pdf	764130 abe91339c2126e1c12c8d3cc8ac6ac582ed96033	no	3
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Information:					
20	Non Patent Literature	Kurs_Simultaneous_mid-range_power.pdf	121689 50b9ab42b88dc49168b019f6ccb593031b9de1af	no	3
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Information:					
21	Non Patent Literature	Schneider_ACriticalLook.pdf	1503656 a4eda83867bdc84b93ea67ae4dfe848c57f0bd09	no	6
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Information:					
22	Non Patent Literature	Schuder_EnergyTransportInto.pdf	5756325 89fe6760a72370181146b86a20c0beb3c52b0e02	no	8
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Information:					
23	Non Patent Literature	Schuder_An_Inductively_Coupled.pdf	4491661 d6f09cbb03b0bf2cb6b8402871fe0f35040d4c96	no	9
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Information:					
24	Non Patent Literature	Schuder_PoweringAnArtificial.pdf	194656 36b69cc8ed8e9adf06c010cb2e5bcea5a43c7c09	no	7
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Information:					
25	Non Patent Literature	Soljacic_WirelessNonradiativeEnergy.pdf	2636887 ebbafc12e22fcff1e4bd8465fdaa03f8b1e72268	no	15
Warnings:					
Information:					
26	Non Patent Literature	Stark_lll_Wireless_Power_Transmission.pdf	13679353 cfc3f27384eb80febd6977b78eaa4485d2ab686e	no	247
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Information:					
27	Non Patent Literature	60698442_APP_07-12-2005.pdf	884027 b740c85ff6a04e4cf442d747443bf33aa7974344	no	14
Warnings:					
Information:					

28	Non Patent Literature	60908666_APP_03-28-2007.pdf	7311096 15d3d207092f945c867cbc7ed55871fb6a480703	no	108
Warnings:					
Information:					
29	Fee Worksheet (SB06)	fee-info.pdf	30165 d8041a75cdf3ef3255f50b58aa2315502c6e4975	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	86830505		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Patent Application Fee Transmittal

Application Number:	12567716
Filing Date:	25-Sep-2009
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Filer:	John A. Monocello/Kelly Smith
Attorney Docket Number:	WTCY-0026-P01

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

PATENT COOPERATION TREATY

ADVANCE E-MAIL

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING TRANSMITTAL OF COPY OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (CHAPTER I OF THE PATENT COOPERATION TREATY)
(PCT Rule 44bis.1(c))

To:

NORTRUP, John, H.
Strategic Patents, P.C.
Intellevate
P.O. Box 52050
Minneapolis, MN 55402
ETATS-UNIS D'AMERIQUE

Date of mailing *(day/month/year)*
25 August 2011 (25.08.2011)

Applicant's or agent's file reference
WTCY0014PWO

IMPORTANT NOTICE

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2010/024199	13 February 2010 (13.02.2010)	13 February 2009 (13.02.2009)

Applicant
WITRICITY CORPORATION et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

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Form PCT/IB/326 (January 2004)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference WTCY0014PWO	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2010/024199	International filing date *(day/month/year)* 13 February 2010 (13.02.2010)	Priority date *(day/month/year)* 13 February 2009 (13.02.2009)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant WITRICITY CORPORATION		

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).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   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.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	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 Article 35(2) 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

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.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 44*bis* .2).

	Date of issuance of this report 16 August 2011 (16.08.2011)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Dorothée Mülhausen e-mail: pt01.pct@wipo.int

Form PCT/IB/373 (January 2004)

From the
INTERNATIONAL SEARCHING AUTHORITY

To: JOHN H. NORTRUP
STRATEGIC PATENTS, P.C.
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	14 MAY 2010

Applicant's or agent's file reference	FOR FURTHER ACTION
WTCY0014PWO	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 10/24199	13 February 2010 (13.02.2010)	13 February 2009 (13.02.2009)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H01F 27/42 (2010.01)
USPC - 307/104

Applicant WITRICITY CORPORATION

1. This opinion contains indications relating to the following items:

- [X] 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
- [X] Box No. V Reasoned statement under Rule 43*bis*.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 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	03 May 2010 (03.05.2010)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 10/24199

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 INTERNATIONAL SEARCHING AUTHORITY

International application No.: PCT/US 10/24199

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	12-15, 27-30	YES
	Claims	1-11, 16-26, 31-33	NO
Inventive step (IS)	Claims	None.	YES
	Claims	1 - 33	NO
Industrial applicability (IA)	Claims	1 - 33	YES
	Claims	None.	NO

2. Citations and explanations:

Claims 1-11, 16-26 and 31 lack novelty under PCT Article 33(2) as being anticipated by US 2007/0222542 A1 (Joannopoulos).

Regarding claim 1, Joannopoulos discloses a wireless power transfer system (source 1 and device 2; loop 10, loop 12, of N coils of radius r of conducting wire with circular cross-section, para. [0015], [0024], [0025], [0028], Fig. 1, 3) comprising: at least one source magnetic resonator (source 1; loop 10, para. [0015], [0024], [0025], [0028], Fig. 1, 3) comprising a capacitively-loaded conducting loop (capacitively-loaded conducting-wire loop, para. [0019], [0025], Fig. 3) coupled to a power source (external power supply, para. [0005], [0006]) and configured to generate an oscillating magnetic field (long-lived oscillatory resonant electromagnetic modes, resonant frequency/Omega, para. [0002], [0013], [024], [0025], [0026], [0031]); and at least one device magnetic resonator (device 2; loop 12, para. [0015], [0024], [0025], [0028], Fig. 1, 3), distal from said source resonators (distances D, para. [0034], Fig. 1, 3), comprising a capacitively-loaded conducting loop (capacitively-loaded conducting-wire loop, para. [0019], [0025], Fig. 3) configured to convert said oscillating magnetic fields into electrical energy (para. [0012], Fig. 6A, 6B); wherein at least one said resonator has a keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) around the resonator that surrounds the resonator with a layer of non-lossy material (air, para. [0017], [0018], [0020], [0024], [0025], [0032], [0037], Fig. 2A, 2B).

Regarding claim 2, Joannopoulos discloses the system of claim 1, wherein the keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) extends at a symmetric distance around the resonator (air, supports high-Q whispering-gallery modes, para. [0008], [0017], [0018], [0020], Fig. 2A).

Regarding claim 3, Joannopoulos discloses the system of claim 1, wherein the keep-out zone (near field, para. [0014], [0018], [0021], [0026], [0027]) extends at a asymmetric distance around the resonator (air, supports high-Q whispering-gallery modes, dielectric waveguides, can support guided modes, para. [0008], [0017], [0018], [0020], [0024], Fig. 2B).

Regarding claim 4, Joannopoulos discloses the system of claim 3, wherein the keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) is largest around regions of the resonator where the electric fields are the largest (proximal cavity 20, para. [0008], [0020], [0024], Fig. 2B)

Regarding claim 5, Joannopoulos discloses the system of claim 1, wherein the smallest keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 0.25 mm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 6, Joannopoulos discloses the system of claim 1, wherein the smallest keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 1 cm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 7, Joannopoulos discloses the system of claim 1, wherein the smallest keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 10 cm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 8, Joannopoulos discloses the system of claim 1, wherein the smallest keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) is approximately 1.0 per-cent of the characteristic size of the resonator (characteristic size L.sub.1, L.sub.2; distance between the two resonators can be larger than the characteristic size of each resonator; D/r; rough estimate in the microwave, one can use one coil (N=1) of copper wire and then for r=1 cm and .alpha.=1 mm, appropriate for example for a cell phone; r=30 cm for a laptop or a household robot; for r=1 m source loop on a room ceiling; r=30 cm and .alpha.=2 mm for a laptop or a household robot, para. [0005], [0016], [0027], [0028]).

Continued in supplemental boxes.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

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Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
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V.2. Citations and explanations:

Regarding claim 9, Joannopoulos discloses the system of claim 1, wherein the smallest keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) is approximately 0.1 per-cent of the characteristic size of the resonator (characteristic size L.sub.1, L.sub.2; distance between the two resonators can be larger than the characteristic size of each resonator; D/r; rough estimate in the microwave, one can use one coil (N=1) of copper wire and then for r=1 cm and .alpha.=1 mm, appropriate for example for a cell phone; r=30 cm for a laptop or a household robot; for r=1 m source loop on a room ceiling; r=30 cm and .alpha.=2 mm for a laptop or a household robot, para. [0005], [0016], [0027], [0028]).

Regarding claim 10, Joannopoulos discloses the system of claim 1, wherein the magnetic resonator further comprises a magnetic material (metallodielectric photonic crystals, para. [0022]).

Regarding claim 11, Joannopoulos discloses the system of claim 1, wherein at least one magnetic resonator has an intrinsic Q greater than 100 (Q.sub.rad = 1988, 1258, 702, 226; Q.sub.abs = 312530, 86980, 21864, 1662, para. [0034]).

Regarding claim 16, Joannopoulos discloses the system of claim 10, wherein at least one magnetic resonator is located inside a living creature (human, para. [0012], [0032], [0038] through [0041]).

Regarding claim 17, Joannopoulos discloses a method for wireless power transfer (source 1 and device 2; loop 10, loop 12, of N coils of radius r of conducting wire with circular cross-section, para. [0015], [0024], [0025], [0028], Fig. 1, 3) comprising: energizing at least one source magnetic resonator (source 1; loop 10, para. [0015], [0024], [0025], [0028], Fig. 1, 3) comprising a capacitively-loaded conducting loop (capacitively-loaded conducting-wire loop, para. [0019], [0025], Fig. 3) to generate an oscillating magnetic field (long-lived oscillatory resonant electromagnetic modes, resonant frequency/Omega, para. [0002], [0013], [024], [0025], [0026], [0031]); and providing at least one device magnetic resonator (device 2; loop 12, para. [0015], [0024], [0025], [0028], Fig. 1, 3), distal from said source resonators (distances D, para. [0034], Fig. 1, 3), comprising a capacitively-loaded conducting loop (capacitively-loaded conducting-wire loop, para. [0019], [0025], Fig. 3) configured to convert said oscillating magnetic fields into electrical energy (para. [0012], Fig. 6A, 6B); maintaining a keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) around at least one resonator to maintain a separation distance between the resonator and lossy material of the environment (background dielectric (free space/air, para. [0024], [0025]).

Regarding claim 18, Joannopoulos discloses the method of claim 17, wherein the keep-out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) extends at a symmetric distance around the resonator (air, supports high-Q whispering-gallery modes, para. [0008], [0017], [0018], [0020], Fig. 2A).

Regarding claim 19, Joannopoulos discloses the method of claim 17, wherein the keep-out zone (near field, para. [0014], [0018], [0021], [0026], [0027]) extends at an asymmetric distance around the resonator (air, supports high-Q whispering-gallery modes, dielectric waveguides, can support guided modes, para. [0008], [0017], [0018], [0020], [0024], Fig. 2B).

Regarding claim 20, Joannopoulos discloses the method of claim 17, wherein the smallest keep out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 0.25 mm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 21, Joannopoulos discloses the method of claim 17, wherein the smallest keep out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 1 cm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 22, Joannopoulos discloses the method of claim 17, wherein the smallest keep out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) exceeds 10 cm (microwave regime; appropriate for meter-range coupling applications; radial modal decay length, which determines the coupling strength, is on the order of the wavelength, para. [0008], [0021], [0022], [0023]).

Regarding claim 23, Joannopoulos discloses the method of claim 17, wherein the smallest keep out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) is approximately 1.0 per-cent of the characteristic size of the resonator (characteristic size L.sub.1, L.sub.2; distance between the two resonators can be larger than the characteristic size of each resonator; D/r; rough estimate in the microwave, one can use one coil (N=1) of copper wire and then for r=1 cm and .alpha.=1 mm, appropriate for example for a cell phone; r=30 cm for a laptop or a household robot; for r=1 m source loop on a room ceiling; r=30 cm and .alpha.=2 mm for a laptop or a household robot, para. [0005], [0016], [0027], [0028]).

See Continuation sheet.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.: PCT/US 10/24199

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
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V.2. Citations and explanations:

Regarding claim 24, Joannopoulos discloses the method of claim 17, wherein the smallest keep out zone (omnidirectional stationary (non-lossy) nature of the near field, para. [0014], [0018], [0021], [0026], [0027]) is approximately 0.1 per-cent of the characteristic size of the resonator (characteristic size L.sub.1, L.sub.2; distance between the two resonators can be larger than the characteristic size of each resonator; D/r; rough estimate in the microwave, one can use one coil (N=1) of copper wire and then for r=1 cm and .alpha.=1 mm, appropriate for example for a cell phone; r=30 cm for a laptop or a household robot; for r=1 m source loop on a room ceiling; r=30 cm and .alpha.=2 mm for a laptop or a household robot, para. [0005], [0016], [0027], [0028]).

Regarding claim 25, Joannopoulos discloses the method of claim 17, wherein the magnetic resonator further comprises a magnetic material (metallodielectric photonic crystals, para. [0022]).

Regarding claim 26, Joannopoulos discloses the method of claim 17, wherein at least one magnetic resonator has an intrinsic Q greater than 100 (Q.sub.rad = 1988, 1258, 702, 226; Q.sub.abs = 312530, 86980, 21864, 1662, para. [0034]).

Regarding claim 31, Joannopoulos discloses the method of claim 26, wherein at least one magnetic resonator is located inside a living creature (human, para. [0012], [0032], [0038] through [0041]).

Claims 32 and 33 lack novelty under PCT Article 33(2) as being anticipated by US 2008/0012569 A1 to Hall et al. (hereinafter 'Hall').

Regarding claim 32, Hall discloses a source for wireless power transfer in a shaft (component 200, para. [0041], Fig. 3, 3A) comprising a capacitively-loaded conducting loop (coil 303, comprise between 5 and 40 wire strands 602 and between 1 and 15 coil turns para. [0041], [0042], [0043], Fig. 7, 8) wrapped around a core of magnetic material (magnetic coupler 302 also comprises a coil 303 and an annular trough 404 made of magnetic material, para. [0042], [0043], [0045], Fig. 5, 6) and coupled to a power source (first coupler 304 may be optimized for the transfer of power; electronic device 210 is a power source 1301, para. [0041], [0049]) and configured to generate an oscillating magnetic field (magnetic coupler and the adjacent magnetic coupler may then be adapted to induce magnetic fields in each other when their coils are electrically energized; inductive couplers 302, 1102 may act as band pass filters due to their inherent inductance, capacitance and resistance such that a first frequency is allowed to pass at a first resonant frequency, and a second frequency is allowed to pass at a second resonant frequency, para. [0014], [0046], [0047]); wherein the conducting loops are oriented to be coaxial with length of the shaft (pin end 203 of downhole component 200, para. [0041], Fig.3).

Regarding claim 33, Hall discloses the source of claim 32, further comprising a plurality of capacitively-loaded conducting loops (magnetic coupler 302 comprises a coil 303 having a plurality of windings 601 of wire strands 602, para. [0043], Fig. 6) wrapped around cores of magnetic material (annular trough 404 made of magnetic material, para. [0042], [0043], [0045], Fig. 5, 6) arranged around the diameter of the shaft (pin end 203 of downhole component 200, para. [0041], Fig.3).

Claims 12, 13, 27 and 28 lack an inventive step under PCT Article 33(3) as being obvious over Joannopoulos, in view of US 2008/0030415 A1 to Homan et al. (hereinafter 'Homan').

Regarding claim 12, Joannopoulos discloses the system of claim 10, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the magnetic resonator is immersed in water. Homan discloses a magnetic resonator (axial or tilted coil or antenna; toroidal strip 1200, para. [0042], [0043], [0073], Fig. 9, 10) immersed in water (water; electrical conductivity (or its inverse, resistivity) is an important property of subsurface formations in geological surveys and in prospecting for oil, gas, and water, para. [0005], [0073]). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the dielectric medium application of Homan, since such a combination would result in a down hole system with greater accuracy. (Homan: para. [0005]).

Regarding claim 13, Joannopoulos discloses the system of claim 10, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is immersed in oil. Homan discloses a magnetic resonator (axial or tilted coil or antenna; toroidal strip 1200, para. [0042], [0043], [0073], Fig. 9, 10) immersed in oil (oil; electrical conductivity (or its inverse, resistivity) is an important property of subsurface formations in geological surveys and in prospecting for oil, gas, and water, para. [0005], [0073]). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the dielectric medium application of Homan, since such a combination would result in a down hole system with greater accuracy. (Homan: para. [0005]).

Regarding claim 27, Joannopoulos discloses the method of claim 26, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the magnetic resonator is immersed in water. Homan discloses a magnetic resonator (axial or tilted coil or antenna; toroidal strip 1200, para. [0042], [0043], [0073], Fig. 9, 10) immersed in water (water; electrical conductivity (or its inverse, resistivity) is an important property of subsurface formations in geological surveys and in prospecting for oil, gas, and water, para. [0005], [0073]). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the dielectric medium application of Homan, since such a combination would result in a down hole system with greater accuracy. (Homan: para. [0005]).

See Continuation sheet.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 10/24199

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
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V.2. Citations and explanations:

Regarding claim 28, Joannopoulos discloses the method of claim 26, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is immersed in oil. Homan discloses a magnetic resonator (axial or tilted coil or antenna; toroidal strip 1200, para. [0042], [0043], [0073], Fig. 9, 10) immersed in oil (oil; electrical conductivity (or its inverse, resistivity) is an important property of subsurface formations in geological surveys and in prospecting for oil, gas, and water, para. [0005], [0073]). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the dielectric medium application of Homan, since such a combination would result in a down hole system with greater accuracy. (Homan: para. [0005]).

Claims 14, 15, 29 and 30 lack an inventive step under PCT Article 33(3) as being obvious over Joannopoulos, in view of Hall.

Regarding claim 14, Joannopoulos discloses the system of claim 10, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is immersed in earthen materials. Hall discloses a source for wireless power transfer in a shaft (component 200, para. [0041], Fig. 3, 3A) comprising a magnetic resonator (coil 303, comprise between 5 and 40 wire strands 602 and between 1 and 15 coil turns para. [0041], [0042], [0043], Fig. 7, 8) immersed in earthen materials (formation 18, para. [0043], Fig. 1). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the earthen material application of Hall, since such a combination would result in a down hole system with greater power efficiency. (Hall: para. [0048]).

Regarding claim 15, Joannopoulos discloses the system of claim 10, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is located in a well. Hall discloses a source for wireless power transfer in a shaft (component 200, para. [0041], Fig. 3, 3A) comprising a magnetic resonator (coil 303, comprise between 5 and 40 wire strands 602 and between 1 and 15 coil turns para. [0041], [0042], [0043], Fig. 7, 8) immersed in well (formation 18 to form a borehole 20, para. [0043], Fig. 1). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the well application of Hall, since such a combination would result in a down hole system with greater power efficiency. (Hall: para. [0048]).

Regarding claim 29, Joannopoulos discloses the method of claim 26, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is immersed in earthen materials. Hall discloses a source for wireless power transfer in a shaft (component 200, para. [0041], Fig. 3, 3A) comprising a magnetic resonator (coil 303, comprise between 5 and 40 wire strands 602 and between 1 and 15 coil turns para. [0041], [0042], [0043], Fig. 7, 8) immersed in earthen materials (formation 18, para. [0043], Fig. 1). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the earthen material application of Hall, since such a combination would result in a down hole system with greater power efficiency. (Hall: para. [0048]).

Regarding claim 30, Joannopoulos discloses the method of claim 26, wherein at least one magnetic resonator is immersed a dielectric medium (background dielectric; free space/air, para. [0024], [0025]), yet fails to disclose wherein the at least one magnetic resonator is located in a well. Hall discloses a source for wireless power transfer in a shaft (component 200, para. [0041], Fig. 3, 3A) comprising a magnetic resonator (coil 303, comprise between 5 and 40 wire strands 602 and between 1 and 15 coil turns para. [0041], [0042], [0043], Fig. 7, 8) immersed in well (formation 18 to form a borehole 20, para. [0043], Fig. 1). Since both references are directed toward wireless power transmission systems, it would have been obvious to one of skill in the art to combine the system of Joannopoulos within the well application of Hall, since such a combination would result in a down hole system with greater power efficiency. (Hall: para. [0048]).

Claims 1 - 33 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

PATENT COOPERATION TREATY

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From the INTERNATIONAL BUREAU

NOTIFICATION CONCERNING TRANSMITTAL OF COPY OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (CHAPTER I OF THE PATENT COOPERATION TREATY)
(PCT Rule 44bis.1(c))

To:

NORTRUP, John, H.
Strategic Patents, P.C.
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402
ETATS-UNIS D'AMERIQUE

Date of mailing *(day/month/year)*
20 September 2012 (20.09.2012)

Applicant's or agent's file reference
WTCY0053PWO

IMPORTANT NOTICE

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2011/027868	10 March 2011 (10.03.2011)	10 March 2010 (10.03.2010)

Applicant
WITRICITY CORPORATION et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO
34, chemin des Colombettes
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Form PCT/IB/326 (January 2004)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference WTCY0053PWO	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2011/027868	International filing date *(day/month/year)* 10 March 2011 (10.03.2011)	Priority date *(day/month/year)* 10 March 2010 (10.03.2010)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant WITRICITY CORPORATION		

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).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   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.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	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 Article 35(2) 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

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.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 44*bis* .2).

	Date of issuance of this report 11 September 2012 (11.09.2012)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Simin Baharlou e-mail: pt09.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: JOHN NORTRUP
STRATEGIC PATENTS, P.C.
C/O CPA GLOBAL
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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	05 JUL 2011
Applicant's or agent's file reference WTCY0053PWO	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2011/027868	10 March 2011	10 March 2010

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H04B 5/00 (2011.01)
USPC - 307/104

Applicant WITRICITY CORPORATION

1. This opinion contains indications relating to the following items:

- [X] 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
- [X] Box No. V Reasoned statement under Rule 43*bis*.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 66.1*bis*(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	27 June 2011	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2011/027868

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:

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Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	3, 5-10, 13, 16, 18-19	YES
	Claims	1-2, 4, 11-12, 14-15, 17	NO
Inventive step (IS)	Claims	20-25	YES
	Claims	1-19	NO
Industrial applicability (IA)	Claims	1-25	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-2, 4, 11-12, 14-15, 17 lack novelty under PCT Article 33(2) as being anticipated by Bruhn.

Regarding claim 1, Bruhn discloses a wireless power converter (apparatus for wireless energy transmission, para 0017, Fig. 9) comprising at least one receiving magnetic resonator 130, 132 configured to capture electrical energy received wirelessly (resonator is "electrically isolated", i.e. galvanically isolated from the primary and secondary circuits, Fig. 9, para 0034) through a first oscillating magnetic field (developed by generator 16 and primary winding 18, Fig. 9, para 0034) characterized by a first plurality of parameters (operating at the fundamental frequency, para 0017, 0031, Fig. 9); and at least one transferring magnetic resonator 126, 128 (Fig. 9) configured to generate (through resonance, para 0017-0018, Fig. 9) a second oscillating magnetic field (transferred to the secondary winding 20, para 0017-0018, 0031, Fig. 9) characterized by a second plurality of parameters different from the first plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018), wherein the electrical energy from the at least one receiving magnetic resonator 130, 132 is used to energize the at least one transferring magnetic resonator 126, 128 (Fig. 9) to generate the second oscillating magnetic field (energy coupling is present between the first and second magnetic resonators when they are arranged in the near field, as they are here: the free-space wavelength at even the 60th harmonic of the shortest wavelength contemplated (at 5 MHz) would be 1 meter, such that the spacing here would be understood to be "sub-wavelength" or "near-field", para 0018, Fig. 9).

Regarding claim 2, Bruhn discloses wherein the first plurality of parameters includes a first frequency (operating at the fundamental frequency, para 0017, 0031, Fig. 9) different from a second frequency of the second plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018).

Regarding claim 4, Bruhn discloses wherein the second frequency is approximately an integer multiple of the first frequency (second resonator has twice the resonant frequency of first resonator, para 0018).

Regarding claim 11, Bruhn discloses wherein the at least one receiving magnetic resonator 130, 132 is configurable to capture energy from magnetic fields with different parameters (resonator 130 can receive energies with different frequencies, para 0017-0018, 0040, Fig. 9).

Regarding claim 12, Bruhn discloses wherein the at least one transferring magnetic resonator 126, 128 is configurable to generate magnetic fields with different parameters (resonator 126 can generate and transmit energy with different frequencies, para 0017-0018, 0040, Fig. 9).

Regarding claim 14, Bruhn discloses a system (para 0017, 0043) comprising a source resonator 126, 128 configured to generate a first oscillating magnetic field (transferred to the secondary winding 20, para 0017-0018, 0031, Fig. 9) characterized by a first plurality of parameters (operating at the fundamental frequency, para 0017, 0031, Fig. 9); a device resonator 130, 132 configured to capture electrical energy received wirelessly (resonator is "electrically isolated", i.e. galvanically isolated from the primary and secondary circuits, Fig. 9, para 0034) through a second oscillating magnetic field (developed by generator 16 and primary winding 18, Fig. 9, para 0034) characterized by a second plurality of parameters different from the first plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018); and a wireless power converter (apparatus for wireless energy transmission, para 0017, Fig. 9) including conversion circuitry (circuits as seen in Fig. 9) configured to capture energy from the second oscillating magnetic field (developed by generator 16 and primary winding 18, Fig. 9, para 0034) and to energize the source resonator 126, 128 to generate the first oscillating magnetic field (transferred to the secondary winding 20, energy coupling is present between the first and second magnetic resonators when they are arranged in the near field, as they are here: the free-space wavelength at even the 60th harmonic of the shortest wavelength contemplated (at 5 MHz) would be 1 meter, such that the spacing here would be understood to be "sub-wavelength" or "near-field", para 0017-0018, 0031, Fig. 9).

Regarding claim 15, Bruhn discloses wherein the first plurality of parameters (operating at the fundamental frequency, para 0017, 0031, Fig. 9) and the second plurality of parameters are different in at least a frequency (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018).

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Supplemental Box

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Continuation of:

Regarding claim 17, Bruhn discloses wherein the wireless power converter (apparatus for wireless energy transmission, para 0017, Fig. 9) is powered by electrical energy captured by the device resonator 130, 132 (transferred to the secondary winding 20, energy coupling is present between the first and second magnetic resonators when they are arranged in the near field, as they are here: the free-space wavelength at even the 60th harmonic of the shortest wavelength contemplated (at 5 MHz) would be 1 meter, such that the spacing here would be understood to be "sub-wavelength" or "near-field", para 0017-0018, 0031, Fig. 9).

Claim 3 lacks an inventive step under PCT Article 33(3) as being obvious over Bruhn.

Regarding claim 3, Bruhn discloses the invention above, the invention above, and discloses a first frequency (operating at the fundamental frequency, para 0017, 0031, Fig. 9) and a second frequency (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018), but does not disclose wherein the first frequency is approximately an integer multiple of the second frequency. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a first frequency that is approximately an integer multiple of the second frequency, in order to provide a system that can handle different power levels for providing wireless energy to multiple devices, and because discovering the optimal value of a result effective variable involves only routine skill in the art.

Claims 5, 8-10, 16, 18 lack an inventive step under PCT Article 33(3) as being obvious over Bruhn in view of Cook et al. (hereinafter referred to as Cook).

Regarding claim 5, Bruhn discloses the invention above, but does not specifically disclose wherein the first plurality of parameters includes a first magnitude different from a second magnitude of the second plurality of parameters. Cook is in the field of wireless power systems (para 0044) and teaches wherein the first plurality of parameters includes a first magnitude different from a second magnitude of the second plurality of parameters (transmit power converter unit converts the supply voltage and frequency, such as 110V/60Hz, into another voltage [different voltage] and into another frequency, such as under 50Hz, that is more appropriate for wireless transmission, para 0155-0158). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the different magnitudes as taught in Cook with the invention of Bruhn in order to provide an efficient power transfer system to charge electronic devices (see Cook, para 0017, 0042).

Regarding claim 8, Bruhn discloses the invention above, and further discloses electrical energy captured by the at least one receiving magnetic resonator 130 (resonator 130 captures energy developed by generator 16 and primary winding 18, Fig. 9, para 0034), but does not specifically disclose a first converter circuit configured to convert the electrical energy into a direct current signal. Cook teaches a first converter circuit 1550 configured to convert the electrical energy into a direct current signal (a DC/DC or DC/AC converter 1550 converts the electrical energy received by resonator antenna into direct current, para 0194-0195, Fig. 15). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the direct current conversion as taught in Cook with the invention of Bruhn in order to provide an efficient power transfer system to charge electronic devices (see Cook, para 0017, 0042).

Regarding claim 9, Bruhn discloses the invention above, and further discloses wherein the alternating current signal (power source 16 provides AC current signal, Fig. 9, para 0040) is used to energize the at least one transferring magnetic resonator 126, 128 (energy coupling is present between the first and second magnetic resonators when they are arranged in the near field, as they are here: the free-space wavelength at even the 60th harmonic of the shortest wavelength contemplated (at 5 MHz) would be 1 meter, such that the spacing here would be understood to be "sub-wavelength" or "near-field", para 0018, Fig. 9), but does not disclose a second converter circuit configured to convert the direct current signal from the first converter circuit into an alternating current signal. Cook teaches a second converter circuit (two converter circuits for converting current signals, para 0194-0195, as shown in Fig. 15) configured to convert the direct current signal from the first converter circuit into an alternating current signal (a DC/DC or DC/AC converter 1550 can convert the electrical energy received by resonator antenna into alternating current, para 0194-0195, Fig. 15). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the direct current conversion as taught in Cook with the invention of Bruhn in order to provide an efficient power transfer system to charge electronic devices (see Cook, para 0017, 0042).

Regarding claim 10, Bruhn discloses the invention above, and further discloses at least one receiving magnetic resonator 130, 132 (resonator is "electrically isolated", i.e. galvanically isolated from the primary and secondary circuits, Fig. 9, para 0034) and at least one transferring magnetic resonator 126, 128 (Fig. 9), but does not disclose wherein at least one of the resonators has a quality factor Q>100. Cook teaches a resonator with a quality factor Q>100 (magnetic resonant antennas used in system must provide a Q-factor as high as possible, and can provide Q-factors up to 300, para 0060-0061). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the high quality factor resonator as taught in Cook with the invention of Bruhn in order to provide a very efficient wireless power transmission system with minimal power losses (see Cook, para 0047).

Regarding claim 16, Bruhn discloses the invention above, but does not specifically disclose wherein the first plurality of parameters and the second plurality of parameters of the oscillating magnetic fields are different in at least a magnitude. Cook teaches wherein the first plurality of parameters and the second plurality of parameters of the oscillating magnetic fields are different in at least a magnitude (transmit power converter unit converts the supply voltage and frequency, such as 110V/60Hz, into another voltage [different voltage] and into another frequency, such as under 50Hz, that is more appropriate for wireless transmission, para 0155-0158). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the different magnitudes as taught in Cook with the invention of Bruhn in order to provide an efficient power transfer system to charge electronic devices (see Cook, para 0017, 0042).

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Supplemental Box

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Continuation of:

Regarding claim 18, Bruhn discloses the invention above, and further discloses the source resonator 126, 128 and the device resonator 130, 132 (Fig. 9), but does not disclose wherein at least one of the resonators has a quality factor Q>100. Cook teaches a resonator with a quality factor Q>100 (magnetic resonant antennas used in system must provide a Q-factor as high as possible, and can provide Q-factors up to 300, para 0060-0061). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the high quality factor resonator as taught in Cook with the invention of Bruhn in order to provide a very efficient wireless power transmission system with minimal power losses (see Cook, para 0047).

Claims 6-7 lack an inventive step under PCT Article 33(3) as being obvious over Bruhn in view of Keyes, IV et al. (hereinafter referred to as Keyes).

Regarding claim 6, Bruhn discloses the invention above, and discloses wherein the first plurality of parameters includes a first frequency (operating at the fundamental frequency, para 0017, 0031, Fig. 9) different from a second frequency of the second plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018), but does not disclose a frequency hopping sequence. Keyes is in the field of wireless energy transfer systems (para 0008-0009, Fig. 43), and teaches a frequency hopping sequence (power transmitted wirelessly using frequency hopping technique, para 0056-0058). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the frequency hopping sequence as taught in Keyes with the invention of Bruhn in order to avoid wireless interference (see Keyes, para 0056).

Regarding claim 7, Bruhn discloses the invention above, and discloses wherein the first plurality of parameters (operating at the fundamental frequency, para 0017, 0031, Fig. 9) includes a sequence different from a second sequence of the second plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018), but does not disclose an on/off sequence. Keyes teaches an on/off sequence (wireless reception of on or off control commands for wireless base units, para 0094). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the on/off sequence as taught in Keyes with the invention of Bruhn in order to provide a method of wirelessly powering devices on and off (see Keyes, para 0007-0008).

Claims 13, 19 lack an inventive step under PCT Article 33(3) as being obvious over Bruhn in view of Lee.

Regarding claim 13, Bruhn discloses the invention above, and discloses a loop inductor 130 (Fig. 9), but does not disclose wherein the at least one receiving magnetic resonator and the at least one transferring resonator share a loop inductor. Lee is in the field of wireless power converters (para 0001) and teaches wherein the at least one receiving magnetic resonator and the at least one transferring resonator share a loop inductor (transmitter and receiver are combined, para 0048, and constructed by winding transmission coil outputting power generated from electromagnetic wave generating source, para 0051, Fig. 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the shared loop as taught in Lee with the invention of Bruhn to provide a more efficient wireless power system for transferring power by maximizing generation and reception of electromagnetic waves in the resonance circuit (see Lee, para 0051).

Regarding claim 19, Bruhn discloses the invention above, and discloses a loop inductor 130 (Fig. 9), but does not disclose wherein the source resonator and the device resonator include a shared loop inductor. Lee teaches wherein the at least one receiving magnetic resonator and the at least one transferring resonator share a loop inductor (transmitter and receiver are combined, para 0048, and constructed by winding transmission coil outputting power generated from electromagnetic wave generating source, para 0051, Fig. 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the shared loop as taught in Lee with the invention of Bruhn to provide a more efficient wireless power system for transferring power by maximizing generation and reception of electromagnetic waves in the resonance circuit (see Lee, para 0051).

Claims 20-25 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest:

Regarding claim 20, a method of wireless power conversion comprising: providing a configurable magnetic resonator; tuning the configurable magnetic resonator to capture a first oscillating magnetic field characterized by a first plurality of parameters; converting the oscillating magnetic field into electrical energy; storing the electrical energy as stored energy in an energy storage element; tuning the configurable magnetic resonator to generate a second oscillating magnetic field characterized by a second plurality of parameters; and energizing the configurable magnetic resonator using the stored energy to produce the second oscillating magnetic field.

Claims 21-25 meet the criteria due to their dependence on novel claim 20.

The prior art, as shown below, details some aspects of the invention, however, none of the prior art teaches all the missing limitations either alone or in combination as specified.

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Bruhn (US 2009/0085408 A1) teaches a method of wireless power conversion (method for wireless energy transmission, para 0017, Fig. 9) comprising providing a configurable magnetic resonator 130, 132 (resonators can be configured for different frequencies, para 0017, Fig. 9); tuning the configurable magnetic resonator 130, 132 to capture (resonator is "electrically isolated", i.e. galvanically isolated from the primary and secondary circuits, Fig. 9, para 0034) a first oscillating magnetic field (developed by generator 16 and primary winding 18, Fig. 9, para 0034) characterized by a first plurality of parameters (operating at the fundamental frequency, para 0017, 0031, Fig. 9); converting the oscillating magnetic field into electrical energy (magnetic field converted induces voltage to provide current flow, para 0005, 0017-0018); tuning a [different, second] configurable magnetic resonator 126, 128 (Fig. 9) to generate (through resonance, para 0017-0018, Fig. 9) a second oscillating magnetic field (transferred to the secondary winding 20, para 0017-0018, 0031, Fig. 9) characterized by a second plurality of parameters (different at least for operating at the second harmonic or other multiple of the fundamental frequency, para 0017-0018); and energizing the [different, second] configurable magnetic resonator to produce the second oscillating magnetic field (energy coupling is present between the first and second magnetic resonators when they are arranged in the near field, as they are here: the free-space wavelength at even the 60th harmonic of the shortest wavelength contemplated (at 5 MHz) would be 1 meter, such that the spacing here would be understood to be "sub-wavelength" or "near-field", para 0018, Fig. 9), but does not disclose tuning a magnetic resonator to capture energy, storing the energy, and then tuning the same magnetic resonator to generate energy using the stored energy to wirelessly transfer power.

Cook (US 2009/0243397 A1) teaches a method (para 0249) of wireless power conversion (wireless power system including power converter, para 0153-0158, Fig. 13, Fig. 15) comprising providing a configurable magnetic resonator (resonant magnetic antenna is adjustable to provide different operational parameters and configurations, para 0143-0144, 0210); tuning the configurable magnetic resonator (resonator receives tuning through tuning network, para 0194, Fig. 15) to capture a first oscillating magnetic field (receive antenna unit is a resonant magnetic antenna for receiving energy in form of magnetic field, para 0143-0144, 0191, Fig. 15) characterized by a first plurality of parameters (energy is in form of magnetic field which is oscillating or resonating and characterized by parameters such as frequency, para 0143-0144, 0157); converting the oscillating magnetic field into electrical energy (power converter receives energy in form of magnetic field and converts to DC current to be used by devices, para 0129, 0143-0144); tuning a [different, second] configurable magnetic resonator (resonator receives tuning through tuning network, para 0175, Fig. 13) to generate a second oscillating magnetic field characterized by a second plurality of parameters (energy transmitted is in form of magnetic field and is characterized by parameters such as frequency, para 0143-0144, 0156); and energizing the [different, second] configurable magnetic resonator using the stored energy to produce the second oscillating magnetic field (wireless energy transfer system relays energy from the energy receiver which receives power source supply and sends it to the energy receiver which powers the device, para 0129, 0143-0144), but does not disclose tuning a magnetic resonator to capture energy, storing the energy, and then tuning the same magnetic resonator to generate energy using the stored energy to wirelessly transfer power.

Iverson (US 2008/0036588 A1) teaches storing the electrical energy as stored energy in an energy storage element 302 (energy harvesting unit 302 stores the energy electromagnetically received by antenna coil 106 from master antenna coil 104, para 0005, 0019, Fig. 3), and using the stored energy (stored energy is used to power remote unit 306 and to transmit message wirelessly through antenna 106, para 0005, 0019, Fig. 3), but does not disclose tuning a magnetic resonator to capture energy, storing the energy, and then tuning the same magnetic resonator to generate energy using the stored energy to wirelessly transfer power.

Claims 1-25 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12/567,716
	Filing Date	Sep 25, 2009
	First Named Inventor	Morris P. Kesler
	Art Unit	2836
	Examiner Name	Hal Ira Kaplan
	Attorney Docket Number	WTCY-0026-P01

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-5703461		Dec 30, 1997	Minoshima, Norimoto et al.	
		US-5923544		Jul 13, 1999	Urano, Takashi	
		US-7919886 B2		Apr 5, 2011	Tanaka, Katsuyuki	
		US-8304935 B2		Nov 6, 2012	Karalis, Aristeidis et al.	
		US-8324759		Dec 4, 2012	Karalis, Aristeidis et al.	

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-20050288741A1		Dec 29, 2005	Hassler Jr, William L., et al.	
		US-20120228952A1		Sep 13, 2012	Hall, Katherine L., et al.	
		US-20120228953A1		Sep 13, 2012	Kesler, Morris P., et al.	
		US-20120228954A1		Sep 13, 2012	Kesler, Morris P., et al.	
		US-20120235500A1		Sep 20, 2012	Ganem, Steven J., et al.	

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12/567,716
	Filing Date	Sep 25, 2009
	First Named Inventor	Morris P. Kesler
	Art Unit	2836
	Examiner Name	Hal Ira Kaplan
	Attorney Docket Number	WTCY-0026-P01

		US-2012023 5501A1		Sep 20, 2012	Kesler, Morris P., et al.	
		US-2012023 5502A1		Sep 20, 2012	Kesler, Morris P., et al.	
		US-2012023 5503A1		Sep 20, 2012	Kesler, Morris P., et al.	
		US-2012023 5504A1		Sep 20, 2012	Kesler, Morris P., et al.	
		US-2012023 5505A1		Sep 20, 2012	Schatz, David A., et al.	
		US-2012023 5566A1		Sep 20, 2012	Karalis, Aristeidis et al.	
		US-2012023 5567A1		Sep 20, 2012	Karalis, Aristeidis et al.	
		US-2012023 5633A1		Sep 20, 2012	Kesler, Morris P., et al.	
		US-2012023 5634A1		Sep 20, 2012	Hall, Katherine L., et al.	
		US-2012023 9117A1		Sep 20, 2012	Kesler, Morris P., et al.	
		US-2012024 2159A1		Sep 27, 2012	Lou, Herbert T., et al.	
		US-2012024 2225A1		Sep 27, 2012	Karalis, Aristeidis et al.	
		US-2012024 8884A1		Oct 4, 2012	Karalis, Aristeidis et al.	

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12/567,716
	Filing Date	Sep 25, 2009
	First Named Inventor	Morris P. Kesler
	Art Unit	2836
	Examiner Name	Hal Ira Kaplan
	Attorney Docket Number	WTCY-0026-P01

		US-2012024 8886A1		Oct 4, 2012	Kesler, Morris P., et al.	
		US-2012024 8887A1		Oct 4, 2012	Kesler, Morris P., et al.	
		US-2012024 8888A1		Oct 4, 2012	Kesler, Morris P., et al.	
		US-2012024 8981A1		Oct 4, 2012	Karalis, Aristeidis et al.	
		US-2012025 6494A1		Oct 11, 2012	Kesler, Morris P., et al.	
		US-2012028 0765A1		Nov 8, 2012	Kurs, Andre B., et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
		DE-20016655 U1			Feb 14, 2002	IC HAUS GMBH	English language translation	
		DE-10221484 A1			Nov 27, 2003	Laue, Hans-Joachim et al.	English abstract only	

NON-PATENT LITERATURE DOCUMENTS

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12/567,716
	Filing Date	Sep 25, 2009
	First Named Inventor	Morris P. Kesler
	Art Unit	2836
	Examiner Name	Hal Ira Kaplan
	Attorney Docket Number	WTCY-0026-P01

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
		PCT/US2010/024199, , "International Application Serial No. PCT/US2010/024199, International Preliminary Report on Patentability, August 25, 2011", August 16, 2011, 8 pages	
		PCT/US2011/027868, , "International Application Serial No. PCT/US2011/027868, International Preliminary Report on Patentability mailed 09-20-12", WITRICITY CORPORATION et al, 8 pages	

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.
[4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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	Filing Date	Sep 25, 2009
	First Named Inventor	Morris P. Kesler
	Art Unit	2836
	Examiner Name	Hal Ira Kaplan
	Attorney Docket Number	WTCY-0026-P01

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Jeffrey Ambroziak/	Date (YYYY-MM-DD)	11-28-2012
Name/Print	Jeffrey Ambroziak	Registration Number	47387

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by

Electronic Acknowledgement Receipt

EFS ID:	14333725
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	87084
Filer:	Jeffrey R. Ambroziak/Jennifer Sammartin
Filer Authorized By:	Jeffrey R. Ambroziak
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	28-NOV-2012
Filing Date:	25-SEP-2009
Time Stamp:	20:49:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	PCTUS2011027868_IPRP.pdf	474792 60acbf696eb74ec348b2a8a8511154f063709dc6	no	8

Warnings:	
Information:	

2	Non Patent Literature	PCTUS2010024199_IPRP.pdf	509448 b7c7ad0194f4b5a729a3375f6236a0b99a60d6c3	no	8
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	WTCY-0026-P01_SIDS.pdf	1075735 8a33e01ab2de1365df1e17728e712428f0e22897	no	5
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Foreign Reference	DE20016655U1.pdf	855733 7cf1a04125e70ea795d2b6f72551a6a6c04b8445	no	21
Warnings:					
Information:					
5	Foreign Reference	DE_10221484.pdf	275777 296903e96995fe5c00be9be517a6efb38136bc82	no	6
Warnings:					
Information:					
6	Transmittal Letter	WTCY-0026-P01_IDS_Cover-Letter.pdf	88386 d92dce6b957c5bd35914f7185d737796e8d5bac3	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	3279871		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Morris P. Kesler et al.	Examiner:	Hal Ira Kaplan
Serial No.:	12/567,716	Group Art Unit:	2836
Filed:	September 25, 2009	Docket:	WTCY-0026-P01
Title:	WIRELESS ENERGY TRANSFER SYSTEMS		

INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Pursuant to the requirements of 37 C.F.R. § 1.97, Applicants hereby submit this Information Disclosure Statement which includes completed Form(s) PTO/SB/08a.

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Information Disclosure Statement be entered and the documents listed on the attached Form(s) PTO/SB/08a be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the PTO/SB/08a form(s), initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Further, Applicants respectfully direct the Examiner's attention to the below-listed related applications. These items, which refer to applications that, at this time and according to each application's current prosecution history, may be related to the prosecution of the present case. Applicants' reference to the co-pending applications is not an admission of the materiality of any application or the prosecution history thereof, nor is it an admission that any of the below co-pending applications constitute prior art.

Application Ser. No.	**Filing Date:**	**Attorney Docket No.**
13621503	2012-09-17	WTCY-0005-P01
13608956	2012-09-10	WTCY-0064-P01
PCT/US12/54490	2012-09-10	WTCY-0064-PWO
13612494	2012-09-12	WTCY-0065-P01
13654980	2012-10-18	WTCY-0070-P01
PCT/US12/60793	2012-10-18	WTCY-0070-PWO
13688756	2012-11-05	WTCY-0071-P01
PCT/US12/63530	2012-11-05	WTCY-0071-PWO

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee is required with the Information Disclosure Statement. However, if an Office Action on the merits has been mailed, Applicants hereby authorize the Commissioner to charge any additional fees to Deposit Account 50-5087 in order to have this Information Disclosure Statement considered.

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Respectfully submitted,

MORRIS P. KESLER ET AL.

By their Representatives,

Customer No. 87084

Date November 28, 2012

By /Jeffrey Ambroziak/
Jeffrey Ambroziak
Reg. No. 47,387

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Morris P. Kesler et al.	Group Art Unit: 2836
Serial No.: 12/567,716	Confirmation No. 4901
Filed: September 25, 2009	Examiner: Hal Ira Kaplan

RESPONSE UNDER 37 CFR § 1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicants have reviewed the non-final Office Action mailed on June 28, 2012 ("Office Action"), and provide this response thereto.

A **petition for extension of time** begins on page 2 of this Response.

A listing of Claims begins at page 3 of this Response.

Remarks begin at page 7 of this response.

Amendments to the Claims

Please replace the claims with the following claim listing, which replaces all prior versions and listing of the claims in the instant application:

1 - 6. (Canceled).

7. (Currently Amended) A system, comprising:

a source resonator having a Q-factor Q_1 and a characteristic size x_1, coupled to a power generator with direct electrical connections; and

a second resonator having a Q-factor Q_2 and a characteristic size x_2, coupled to a load with a second direct electrical connection, and located a distance D from the source resonator, wherein the source resonator and the second resonator are coupled to exchange energy wirelessly among the source resonator and the second resonator in order to transmit power from the power generator to the load, wherein $\sqrt{Q_1 Q_2}$ is greater than 100, wherein at least one of the source resonator and the second resonator is a coil of at least one turn of a conducting material connected to a first network of capacitors, and

~~The system of claim 5,~~ wherein the direct electrical connections of at least one of the source resonator to the ground terminal of the power generator and the second resonator to the ground terminal of the load is made at a point on an axis of electrical symmetry of the first network of capacitors.

8. (Original) The system of claim 7, wherein the first network of capacitors includes at least one tunable butterfly-type capacitor, wherein the direct electrical connection to the ground terminal is made on a center terminal of the at least one tunable butterfly-type capacitor.

9. (Currently Amended) The system of claim [5] 7, wherein the direct electrical connection of at least one of the source resonator to the power generator and the second resonator to the load is made via a second network of capacitors, wherein the first network of capacitors and the second network of capacitors form an impedance matching network.

10. (Original) The system of claim 9, wherein the impedance matching network is designed to match the coil to a characteristic impedance of the power generator or the load at a driving frequency of the power generator.

11. (Original) The system of claim 9, wherein at least one of the first network of capacitors and the second network of capacitors includes at least one tunable capacitor.

12. (Original) The system of claim 11, wherein the first network of capacitors and the second network of capacitors are adjustable to change an impedance of the impedance matching network at a driving frequency of the power generator.

13. (Original) The system of claim 11, wherein the first network of capacitors and the second network of capacitors are adjustable to match the coil to the characteristic impedance of the power generator or the load at a driving frequency of the power generator.

14. (Original) The system of claim 11, wherein at least one of the first network of capacitors and the second network of capacitors includes at least one fixed capacitor that reduces a voltage across the at least one tunable capacitor.

15. (Currently Amended) The system of claim [1] 7, wherein the direct electrical connections of at least one of the source resonator to the power generator and the second resonator to the load are configured to substantially preserve a resonant mode.

16. (Currently Amended) The system of claim [1] 7, wherein at least one of the source resonator and the second resonator is a tunable resonator.

17. (Currently Amended) The system of claim [1] 7, wherein the source resonator is physically separated from the power generator and the second resonator is physically separated from the load.

18. (Currently Amended) The system of claim [1] 7, wherein the second resonator is coupled to a power conversion circuit to deliver DC power to the load.

19. (Currently Amended) The system of claim [1] 7, wherein the second resonator is coupled to a power conversion circuit to deliver AC power to the load.

20. (Currently Amended) The system of claim [1] 7, wherein the second resonator is coupled to a power conversion circuit to deliver both AC and DC power to the load.

21. (Currently Amended) The system of claim [1] 7, wherein the second resonator is coupled to a power conversion circuit to deliver power to a plurality of loads.

22. (Original) A system, comprising:

a source resonator having a Q-factor Q_1 and a characteristic size x_1, and a second resonator having a Q-factor Q_2 and a characteristic size x_2, and located a distance D from the source resonator;

wherein the source resonator and the second resonator are coupled to exchange energy wirelessly among the source resonator and the second resonator; and

wherein $\sqrt{Q_1 Q_2}$ is greater than 100, and wherein at least one of the resonators is enclosed in a low loss tangent material.

23. (Original) A system, comprising:

a source resonator having a Q-factor Q_1 and a characteristic size x_1, and a second resonator having a Q-factor Q_2 and a characteristic size x_2, and located a distance D from the source resonator;

wherein the source resonator and the second resonator are coupled to exchange energy wirelessly among the source resonator and the second resonator, and wherein $\sqrt{Q_1 Q_2}$ is greater than 100; and

wherein at least one of the resonators includes a coil of a plurality of turns of a conducting material connected to a network of capacitors, wherein the plurality of turns

are in a common plane, and wherein a characteristic thickness of the at least one of the resonators is much less than a characteristic size of the at least one of the resonators.

REQUEST FOR EXTENSION OF TIME

Applicant respectfully requests that the time for responding to the outstanding action be extended for two-months from September 28, 2012 to November 28, 2012. A fee of $570.00 as specified by 37 C.F.R 1.17(a)(1) for a large entity accompanies this request.

REMARKS

This paper is responsive to the Office Action mailed June 28, 2012. This Response addresses each of the issues raised by the examiner in the Office Action. Accordingly reconsideration is respectfully requested.

The status of the pending claims is as follows.

Claims **1-23** are pending;

Claims **22** and **23** are allowed;

Claims **1-6, 17, 18** and **21** are rejected;

Claims **7-16, 19** and **20** are objected to;

Claims **1-6** are cancelled;

Claims **7, 8** and **15-21** are amended;

No new matter has been added.

1. Claim Objections

The Examiner objected to claim **15** on the basis of a formality. Specifically, there was asserted a lack of antecedent basis for "the direct electrical connections." Applicants note that claim **15** has been amended to address the source of the objection and, as a result, claim **15** is in condition for allowance.

2. Claim Rejections - 35 USC §112, Second Paragraph

The Examiner rejected claim **4** under 35 USC §112 as being indefinite for use of the word "useful." Applicants note that claim **4** has been cancelled and, as a result, the rejection is rendered moot.

3. Claim Rejections - 35 USC §102

The Examiner rejected claims **1, 3, 4 and 17** under 35 USC §102(e) as being anticipated by Joannopoulus (7,741,734)(hereinafter, "Joannopoulus").

Applicants note that claims **1, 3** and **4** are cancelled herein and, as a result, the rejections of claims **1, 3** and **4** are rendered moot. Claim **17** is now dependent upon an

InductEV, Inc.
Exhibit 1002
Page 718

allowable claim as described more fully below and, as a result, is in condition for allowance.

The Examiner rejected claims **1, 5-6, 18 and 21** under 35 USC §102(e) as being anticipated by Cook et al. (2012/0001492)(hereinafter, "Cook").

Applicants note that claims **1** and **5-6** are cancelled herein and, as a result, the rejections of claims **1** and **5-6** are rendered moot. Claims **18** and **21** are now dependent upon an allowable claim as described more fully below and, as a result, are in condition for allowance.

4. Claim Rejections - 35 USC §103

The Examiner rejected claim **2** under 35 USC §103(a) as being unpatentable over Cook.

Applicants note that claim **2** is cancelled herein and, as a result, the rejection of claim **2** is rendered moot.

5. Allowable Subject Matter

Claims **22** and **23** were allowed. Claims **7-16** and **19-20** were objected to while the Examiner stated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants note that claims have been amended in accordance with the Examiner's request and, as a result, claims **7-16** and **19-20** are in condition for allowance.

InductEV, Inc.
Exhibit 1002
Page 719

CONCLUSION

For all of the foregoing reasons, the claims are believed in condition for allowance and notice of allowance is respectfully requested. Allowance is earnestly solicited, and the Examiner is requested to contact the undersigned should any questions remain relating to this matter. Further, it is believed that the pending claims have been addressed. However, the absence of a reply to any specific rejection, objection, or comment does not signify agreement with or concession of that rejection, objection, or comment. Please charge any additional fees that may be due or credit any overpayment to Deposit Account No. 50-5087.

Respectfully submitted,

MORRIS P. KESLER ET AL.

By their Representatives,

Customer No. 87084

Date: November 28, 2012

By : /Jeffrey Ambroziak/
Jeffrey Ambroziak
GTC Law Group LLP & Affiliates
Reg. No. 47,387
Telephone No. 203-535-3879

Electronic Patent Application Fee Transmittal

Application Number:	12567716
Filing Date:	25-Sep-2009
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Filer:	Jeffrey R. Ambroziak/Jennifer Sammartin
Attorney Docket Number:	WTCY-0026-P01

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with $0 paid	1252	1	570	570

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**570**

Electronic Acknowledgement Receipt

EFS ID:	14330132
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	87084
Filer:	Jeffrey R. Ambroziak/Jennifer Sammartin
Filer Authorized By:	Jeffrey R. Ambroziak
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	28-NOV-2012
Filing Date:	25-SEP-2009
Time Stamp:	16:23:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$570
RAM confirmation Number	6270
Deposit Account	503912
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	WTCY-0026-P01_Response-non_final.pdf	117617 ff898c7ba41a476fbad4ca846739487789fa5c60	no	9
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30257 b769059cf58afcded7c1fa641654e7e7a2e8b03c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	147874		

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
12/567,716	09/25/2009	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY ☐ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 11/28/2012	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 17	Minus	** 23	= 0	X $ =		OR	X $62=	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $ =		OR	X $250=	0
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/FREDERICK BRISCOE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Modified PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2836
Examiner Name	Hal Ira Kaplan
Attorney Docket Number	WTCY-0026-P01

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	20120313449	A1	2012-12-13	Kurs, Andre B., et al.	
	2	20120313742	A1	2012-12-13	Kurs, Andre B., et al.	
	3	20130007949	A1	2013-01-10	Kurs, Andre B., et al.	
	4	20130020878	A1	2013-01-24	Karalis, Aristeidis et al.	
	5	20130033118	A1	2013-02-07	Karalis, Aristeidis et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	6	09298847	JP	A	1997-11-18	CHIBA, YOJI	English Abstract Included	☐
	7	10164837	JP	A	1998-06-19	KIKUCHI, AKIHIKO et al.	English Abstract Included	☐
	8	2001309580	JP	A	2001-11-02	MUTO, MOTOHARU et al.	English Abstract Included	☐
	9	2002010535	JP		2002-01-11	Hideaki, Abe et al.	English Abstract Included	☐
	10	2009062438	WO	A1	2009-05-22	HO, Wing C., et al.		☐
	11	2010104569	WO	A1	2010-09-16	Derbas, Justin R.,		☐

Modified PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12/567,716
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	First Named Inventor	Morris P. Kesler
	Art Unit	2836
	Examiner Name	Hal Ira Kaplan
	Attorney Docket Number	WTCY-0026-P01

						et al.		
	12	2011061388	WO	A1	2011-05-26	Saunamaki, Esa		☐
	13	2012170278	WO	A2	2012-12-13	SCHATZ, David et al.		☐
	14	2013013235	WO	A2	2013-01-24	KARALIS, Aristeidis et al.		☐
	15	2012170278	WO	A3	2013-01-31	Schatz, David A., et al.		☐

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	16	12/613,686, Application Serial No. 12/613,686, Notice of Allowance mailed 1-6-2011, 1/6/2011, 10 pages	☐
	17	JACKSON, J. D. , "Classical Electrodynamics", 3rd Edition, Wiley, New York, 1999, pp. 201-203	☐
	18	PCT/US2012/049777, International Application Serial No. PCT/US2012/049777, International Search Report and Written Opinion mailed 01-23-13", 10 pages	☐

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Modified PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2836
Examiner Name	Hal Ira Kaplan
Attorney Docket Number	WTCY-0026-P01

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.
[4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

Modified PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2836
Examiner Name	Hal Ira Kaplan
Attorney Docket Number	WTCY-0026-P01

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☒ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/John A. Monocello/	Date (YYYY-MM-DD)	2013-02-13
Name/Print	John A. Monocello	Registration Number	51022

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Electronic Patent Application Fee Transmittal

Application Number:	12567716
Filing Date:	25-Sep-2009
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Filer:	John A. Monocello/Debbie Peterson
Attorney Docket Number:	WTCY-0026-P01

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Morris P. Kesler, et al.	Examiner:	Hal Ira Kaplan
Serial No.:	12/567,716	Group Art Unit:	2836
Confirmation No.:	4901		
Filed:	Sep 25, 2009	Docket No.:	WTCY-0026-P01
Title:	WIRELESS ENERGY TRANSFER SYSTEMS		

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application.

Further, Applicants respectfully direct the Examiner's attention to the below-listed related non-published applications. These items, which refer to non-published applications that, at this time and according to each application's current prosecution history, may be related to the prosecution of the present case. Related published applications are provided on the accompanying form SB08 where applicable. Applicants' reference to the co-pending applications is not an admission of the materiality of any application or the prosecution history thereof, nor is it an admission that any of the below or attached co-pending applications constitute prior art.

UN PUB. APPLICATION NO.	FILING DATE	ATTORNEY DOCKET NO.
1. 13/608,956	September 10, 2012	WTCY-0064-P01
2. PCT/US12/54490	September 10, 2012	WTCY-0064-PWO
3. 13/612,494	September 12, 2012	WTCY-0065-P01
4. 13/621,503	September 17, 2012	WTCY-0005-P01
5. 13/654,980	October 18, 2012	WTCY-0070-P01
6. PCT/US12/60793	October 18, 2012	WTCY-0070-PWO
7. 13/668,756	November 5, 2012	WTCY-0071-P01
8. PCT/US12/63530	November 5, 2012	WTCY-0071-PWO
9. 13/752,169	January 28, 2013	WTCY-0075-P01

10. PCT/US13/23478	January 28, 2013	WTCY-0075-PWO

Pursuant to 37 C.F.R. §1.97(c)(2), Applicants have included the fee of $180.00 as set forth in 37 C.F.R. §1.17(p). Applicants hereby authorize the Commissioner to charge any additional fees, or to credit any overage, to Deposit Account 50-3912.

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Respectfully submitted,

MORRIS P. KESLER, ET AL.

By their Representatives,

Date February 13, 2013

By /John A. Monocello, III/
John A. Monocello, III
GTC Law Group LLP & Affiliates
Reg. No. 51022
Office: 412-953-0696

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:

MONOCELLO, III JOHN A.

GTC LAW GROUP LLP & AFFILIATES C/O CPA GLOBAL
P.O. BOX 52050 MINNEAPOLIS MN 55402 USA

CPA GLOBAL
JAN 29 2013
RECEIVED
Coded Verified

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference WTCY-0061-PWO	Date of mailing *(day/month/year)* 23 JANUARY 2013 (23.01.2013) **FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. **PCT/US2012/049777**	International filing date *(day/month/year)* **06 AUGUST 2012 (06.08.2012)**

Applicant

WITRICITY CORPORATION et al

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:

   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 . 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90bis.1 and 90bis.3).

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.
In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19months.

For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the PCT Applicant's Guide, National Chapters.

Name and mailing address of the ISA/KR Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan City, 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer COMMISSIONER Telephone No. 82-42-481-8754

Form PCT/ISA/220 (July 2010)

* Attention

Copies of the documents cited in the international search report can be searched in the following Korean Intellectual Property Office English website for three months from the date of mailing of the international search report.

http://www.kipo.go.kr/en/ => PCT Services => PCT Services

ID : PCT international application number
PW : **TN47X8MH**

Inquiries related to PCT International Search Report or Written Opinion prepared by KIPO as an International Searching Authority can be answered not only by KIPO but also through IPKC (Intellectual Property Korea Center), located in Vienna, VA, which functions as a PCT Help Desk for PCT applicants.

Homepage: http://www.ipkcenter.com
Email: ipkc@ipkcenter.com
Phone: +1 703 388 1066
Fax: +1 703 388 1084

Notes to Form PCT/ISA/220 (July 2010)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
WTCY-0061-PWO		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2012/049777	**06 AUGUST 2012 (06.08.2012)**	04 AUGUST 2011 (04.08.2011)

Applicant

WITRICITY CORPORATION et al

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of **4** sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the **language**, the international search was carried out 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))
   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.
2. ☐ **Certain claims were found unsearchable** (See Box No. II)
3. ☐ **Unity of invention is lacking** (See Box No. III)
4. With regard to the **title,**
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:
5. With regard to the **abstract,**
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. With regard to the drawings,
   a. the figure of the **drawings** to be published with the abstract is Figure No. **25**
      ☒ as suggested by the applicant.
      ☐ as selected by this Authority, because the applicant failed to suggest a figure.
      ☐ as selected by this Authority, because this figure better characterizes the invention.
   b. ☐ none of the figure is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/049777

A. CLASSIFICATION OF SUBJECT MATTER

H02J 17/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H02J 17/00; H02M 3/335; H01F 38/14; H02J 7/10; H02M 3/28; H01M 10/44

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: wireless power transfer, DC power, rectifier, inverter, amplifier

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2002-010535 A (MATSUSHITA ELECTRIC WORKS LTD.) 11 January 2002 See abstract, claims 1-25, and figures 1-26.	1-24
A	JP 10-164837 A (SONY CORP.) 19 June 1998 See abstract, claims 1-5, and figures 1-8.	1-24
A	US 2010-0109445 A1 (ANDRE B. KURS et al.) 6 May 2010 See abstract, claims 1-46, and figures 1-51.	1-24
A	JP 09-298847 A (SONY CORP.) 18 November 1997 See abstract, claims 1-3, and figures 1-2.	1-24
A	JP 2001-309580 A (MATSUSHITA ELECTRIC WORKS LTD.) 02 November 2001 See abstract, claims 1-13, and figures 1-13.	1-24
A	WO 2009-062438 A1 (CITY UNIVERSITY OF HONG KONG et al.) 22 May 2009 See abstract, claims 1-12, and figures 1-12.	1-24

☐ Further documents are listed in the continuation of Box C.

☒ See patent family 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 application or patent 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 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

Date of the actual completion of the international search	Date of mailing of the international search report
22 JANUARY 2013 (22.01.2013)	**23 JANUARY 2013 (23.01.2013)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

PARK, Hye Lyun

Telephone No. 82-42-481-3463

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/US2012/049777

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2002-010535 A	11.01.2002	JP 4135299 B2	20.08.2008
JP 10-164837 A	19.06.1998	None	
US 2010-0109445 A1	06.05.2010	AU 2009-296413 A1	01.04.2010
		AU 2010-213557 A1	19.08.2010
		CA 2738654 A1	01.04.2010
		CA 2752573 A1	19.08.2010
		CN 102239633 A	09.11.2011
		CN 102439669 A	02.05.2012
		EP 2340611 A1	06.07.2011
		JP 2012-504387 A	16.02.2012
		JP 2012-518382 A	09.08.2012
		KR 10-2011-0074761 A	01.07.2011
		KR 10-2011-0127203 A	24.11.2011
		US 2010-0141042 A1	10.06.2010
		US 2010-0164296 A1	01.07.2010
		US 2010-0164297 A1	01.07.2010
		US 2010-0164298 A1	01.07.2010
		US 2010-0171368 A1	08.07.2010
		US 2010-0181843 A1	22.07.2010
		US 2010-0181845 A1	22.07.2010
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		WO 2010-093997 A1	19.08.2010
		WO 2011-112795 A1	15.09.2011

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Exhibit 1002
Page 738

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		WO 2012-037279 A1	22.03.2012
JP 09-298847 A	18.11.1997	None	
JP 2001-309580 A	02.11.2001	JP 4140169 B2	27.08.2008
WO 2009-062438 A1	22.05.2009	CN 101971458 A	09.02.2011
		US 2009-0121675 A1	14.05.2009
		US 8228025 B2	24.07.2012

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Page 739

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
MONOCELLO, III JOHN A.

GTC LAW GROUP LLP & AFFILIATES C/O CPA
GLOBAL P.O. BOX 52050 MINNEAPOLIS MN 55402 USA

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing *(day/month/year)*	**23 JANUARY 2013 (23.01.2013)**
Applicant's or agent's file reference WTCY-0061-PWO	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2012/049777	**06 AUGUST 2012 (06.08.2012)**	04 AUGUST 2011 (04.08.2011)

International Patent Classification (IPC) or both national classification and IPC

H02J 17/00(2006.01)i

Applicant

WITRICITY CORPORATION et al

1. This opinion contains indications relating to the following items:

- [x] 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
- [x] 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
- [x] 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
Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan City, 302-701, Republic of Korea Facsimile No. 82-42-472-7140	22 JANUARY 2013 (22.01.2013)	PARK, Hye Lyun Telephone No.82-42-481-3463

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2012/049777

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. a sequence listing filed or furnished
      ☐ on paper
      ☐ in electronic form

   b. time of filing or furnishing
      ☐ contained in the international application as filed.
      ☐ filed together with the international application in electronic form.
      ☐ furnished 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 additioanl 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:

InductEV, Inc.
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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2012/049777

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

1. Statement

Novelty (N)	Claims	1-24	YES
	Claims	NONE	NO
Inventive step (IS)	Claims	1-24	YES
	Claims	NONE	NO
Industrial applicability (IA)	Claims	1-24	YES
	Claims	NONE	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: JP 2002-010535 A (MATSUSHITA ELECTRIC WORKS LTD.) 11 January 2002
D2: JP 10-164837 A (SONY CORP.) 19 June 1998
D3: US 2010-0109445 A1 (ANDRE B. KURS et al.) 6 May 2010
D4: JP 09-298847 A (SONY CORP.) 18 November 1997
D5: JP 2001-309580 A (MATSUSHITA ELECTRIC WORKS LTD.) 02 November 2001
D6: WO 2009-062438 A1 (CITY UNIVERSITY OF HONG KONG et al.) 22 May 2009

2.1. Novelty and Inventive step

2.1.1. Independent Claim 1
The subject matter of claim 1 differs from these prior art documents in a rectifier control configured to control a switching characteristic of switching elements of the rectifier to regulate a characteristic of an output presented to a load, the rectifier control communicatively coupled to a source amplifier, wherein an amplifier control provides a substantially fixed switching frequency to the switching elements of the amplifier. And they are not obvious to a person skilled in the art by the documents, taken alone or in combination. Therefore, claim 1 meets the requirements of PCT Article 33(2) and (3) with respect to novelty and inventive step.

2.1.2. Dependent Claims 2-20
Claims 2-20 are dependent on claim 1 and therefore meet the requirements of PCT Article 33(2) and (3).

2.1.3. Independent Claim 21
The subject matter of claim 21 differs from these prior art documents in adjusting a duty cycle of a rectifier to meet a power demand at an output of the rectifier and adjusting a duty cycle of an amplifier to obtain a substantially 50% duty cycle at switching elements of the rectifier. And they are not obvious to a person skilled in the art by the documents, taken alone or in combination. Therefore, claim 21 meets the requirements of PCT Article 33(2) and (3) with respect to novelty and inventive step.

2.1.4. Dependent Claims 22-24
Claims 22-24 are dependent on claim 21 and therefore meet the requirements of PCT Article 33(2) and (3).

2.2. Industrial Applicability
Claims 1-24 are industrially applicable under PCT Article 33(4).

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2012/049777

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claims 24 has a typographical error,"currant" seems to be a misprint of "current".

InductEV, Inc.
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Electronic Acknowledgement Receipt

EFS ID:	14944475
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	87084
Filer:	John A. Monocello
Filer Authorized By:	
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	13-FEB-2013
Filing Date:	25-SEP-2009
Time Stamp:	09:21:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	8251
Deposit Account	503912
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Information Disclosure Statement (IDS) Form (SB08)	WTCY-0026-P01_SIDS_02-13-13.pdf	99008 409b77f0ad49ae081d2231994873cdf367fc792d	no	4
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
2	Transmittal Letter	WTCY-0026-P01_SIDS_CL_02-13-13.pdf	96968 40b72a8ba36754fe15133eb28b6882e725c4e0be	no	2
Warnings:					
Information:					
3	Non Patent Literature	12613686_NOA_01062011.pdf	455720 329d8e2c93b2303337beda04067f9d79a6a0ef1d	no	10
Warnings:					
Information:					
4	Non Patent Literature	Jackson_ClassicalElectrodynamics_3rdEdition_pp201-203.pdf	532504 576c39fcb0f060307555008f0ae6c430958550cb4	no	3
Warnings:					
Information:					
5	Non Patent Literature	PCTUS2012049777_ISR_WO.pdf	423344 6d9362dbf87184f699b9ebbca4e9035948121800	no	10
Warnings:					
Information:					
6	Foreign Reference	JP_2001309580_EngAbstractIncluded.pdf	1108629 4cee7ee6a37b100ad2ad4f2d9362e3a6216b18e6	no	18
Warnings:					
Information:					
7	Foreign Reference	JP09298847A_EngAbstractIncluded.pdf	895747 63f5eb587714a16ef7e51e9bb40a0ed989dc4d3b	no	6
Warnings:					
Information:					
8	Foreign Reference	JP10164837A_EngAbstractIncluded.pdf	4136965 e825ede890597eb982c96e6313d274356bbcc554	no	10
Warnings:					
Information:					
9	Foreign Reference	JP2002010535A_EngAbstractIncluded.pdf	11518354 899768f0a58f3c0ee08eda5163ca123cd5d2a135	no	23

Warnings:					
Information:					
10	Foreign Reference	WO_2009062438_A1.pdf	917177 f83dd118f78912e31101a6e037921c229b93a7fd	no	22
Warnings:					
Information:					
11	Foreign Reference	WO2010104569A1.pdf	2876874 0b665ce4ce79982e496d44b4d416db377cf2094b	no	60
Warnings:					
Information:					
12	Foreign Reference	WO2011061388A1.pdf	1580358 d26b098f5b099cfdc29715d8f9e69c6ab658b72c	no	33
Warnings:					
Information:					
13	Foreign Reference	WO2012170278A2.pdf	3784226 5a8815e86a9e78e9e19cdcf7e4b0bf4d8674b1bb	no	85
Warnings:					
Information:					
14	Foreign Reference	WO2013013235A2.pdf	3275534 3ff6a84c3113e2af7c5895f58b5bf837bc5be723	no	77
Warnings:					
Information:					
15	Foreign Reference	WO201212078A3.pdf	198013 1039add1315cf5be399c8ffd674cc61b1b7f278e	no	5
Warnings:					
Information:					
16	Fee Worksheet (SB06)	fee-info.pdf	30294 f1ecfe8d05ab94f432d38d3e8947cf91f3d80ff8	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	31929715		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12567716	KESLER ET AL.
	Examiner	Art Unit
	HAL KAPLAN	2836

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
307	104	6/20/2012	HK

SEARCH NOTES		
Search Notes	Date	Examiner
EAST (US-PGPUB,USPAT,USOCR,FPRS,EPO,JPO,DERWENT,IBM_TDB) - See Search History Printout	6/20/2012	HK
EAST (US-PGPUB,USPAT,USOCR,FPRS,EPO,JPO,DERWENT,IBM_TDB) - See Search History Printout	6/21/2012	HK
EAST (US-PGPUB,USPAT,USOCR,FPRS,EPO,JPO,DERWENT,IBM_TDB) - See Search History Printout	6/22/2012	HK
Inventor name search	6/21/2012	HK
307/104 (updated search)	1/30/2013	HK
EAST (US-PGPUB,USPAT,USOCR,FPRS,EPO,JPO,DERWENT,IBM_TDB) - See Search History Printout (updated search)	1/29/2013	HK
EAST (US-PGPUB,USPAT,USOCR,FPRS,EPO,JPO,DERWENT,IBM_TDB) - See Search History Printout	1/30/2013	HK
Inventor name search	1/29/2013-1/30/2013	HK
Assignee search	1/30/2013	HK

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
307	104	1/30/2013	HK

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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NOTICE OF ALLOWANCE AND FEE(S) DUE

87084 7590 02/14/2013

GTC Law Group LLP & Affiliates
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER
KAPLAN, HAL IRA

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 02/14/2013

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/567,716	09/25/2009	Morris P. Kesler	WTCY-0026-P01	4901

TITLE OF INVENTION: WIRELESS ENERGY TRANSFER SYSTEMS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1770	$300	$0	$2070	05/14/2013

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

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c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/567,716	09/25/2009	Morris P. Kesler	WTCY-0026-P01	4901

TITLE OF INVENTION: WIRELESS ENERGY TRANSFER SYSTEMS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1770	$300	$0	$2070	05/14/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
KAPLAN, HAL IRA	2836	307-104000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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InductEV, Inc.
Exhibit 1002
Page 751

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/567,716	09/25/2009	Morris P. Kesler	WTCY-0026-P01	4901

87084 7590 02/14/2013

GTC Law Group LLP & Affiliates
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER	
KAPLAN, HAL IRA	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 02/14/2013

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 520 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 520 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 02/11)

InductEV, Inc.
Exhibit 1002
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Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No.	Applicant(s)	
	12/567,716	KESLER ET AL.	
	Examiner	Art Unit	
	HAL KAPLAN	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Applicant's amendments dated November 28, 2012*.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☐ The allowed claim(s) is/are _____. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 11/28/12,9/11/12
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

InductEV, Inc.
Exhibit 1002
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DETAILED ACTION

Allowable Subject Matter

1. Claims 7-23 allowed.

2. The following is an examiner's statement of reasons for allowance:

Claims 7-21 are allowed because none of the prior art of record discloses or suggests the direct electrical connections of at least one of the source resonator to the ground terminal of the power generator and the second resonator to the ground terminal of the load made at a point on an axis of electrical symmetry of the first network of capacitors, in combination with the remaining claimed features.

Claim 22 is allowed because none of the prior art of record discloses or suggests the square root of the product of the first and second Q-factors being greater than 100, and at least one of the resonators being enclosed in a low loss tangent material, in combination with the remaining claimed features.

Claim 23 is allowed because none of the prior art of record discloses or suggests at least one of the resonators including a coil of a plurality of turns of a conducting material connected to a network of capacitors, wherein the plurality of turns are in a common plane, and wherein a characteristic thickness of the at least one of the resonators is much less than a characteristic size of the at least one of the resonators, in combination with the remaining claimed features.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

3. Applicant's arguments, see Remarks, filed November 28, 2012, with respect to the objections to claims 7-16, 19, and 20 have been fully considered and are persuasive. The objections have been withdrawn.

4. Applicant's arguments, see Remarks, filed November 28, 2012, with respect to the rejections of claims 17, 18, and 21 under 35 U.S.C. 102(e) have been fully considered and are persuasive. The rejections of claims 17, 18, and 21 have been withdrawn.

5. The rejections of claims 1-6 have been rendered moot because the claims have been canceled.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAL KAPLAN whose telephone number is (571)272-8587. The examiner can normally be reached on M-F 9:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jared Fureman can be reached on 571-272-2391. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hal I. Kaplan/
Primary Examiner, Art Unit 2836

Date Received: 9/11/201
PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	12567716
Filing Date	2009-09-25
First Named Inventor	Kesler, Morris P.
Art Unit	2836
Examiner Name	Kaplan, Hal Ira
Attorney Docket Number	WTCY-0026-P01

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Filing Date	2009-09-25
First Named Inventor	Kesler, Morris P.
Art Unit	2836
Examiner Name	Kaplan, Hal Ira
Attorney Docket Number	WTCY-0026-P01

	94	20070069687		2007-03-29	Suzuki, Katsuya	
	95	20090261778		2009-10-22	Kook, Yoon-Sang	
	96	20120184338		2012-07-19	Kesler et al.	
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	108	20100060077	A1	2010-03-11	Paulus, Peter et al.	
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	1	102239633	CN	A	2011-11-09	WiTricity Corporation	English Abstract Only	☐
	2	2340611	EP	A1	2011-07-06	WiTricity Corporation	English Abstract Only	☐
	3	2396796	EP	A1	2011-12-21	WiTricity Corporation	English Abstract Only	☐

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	Attorney Docket Number	WTCY-0026-P01

	4	1734/KOLNP/2011	IN		2011-09-02	WiTricity Corporation		☐
	5	02097005	JP	A	1990-04-09	Tokyo Cosmos Electric Co., Ltd.	English Abstract Only	☐
	6	2012504387	JP	A	2012-02-16	WiTricity Corporation	English Abstract Only	☐
	7	2006011769	WO	A1	2006-02-02	JC Protek Co., Ltd.		☐
	8	2011112795	WO	A1	2011-09-15	WiTricity Corporation		☐
	9	2012037279	WO	A1	2012-03-22	WiTricity Corporation		☐
	10	2011062827	WO	A2	2011-05-26	Apple Inc.		☐
	11	11188113	JP	A	1999-07-13	Seiichi, Ishikawa		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	International Application No. PCT/US2011/027868, International Search Report and Written Opinion mailed July 5, 2011, 9 pages.	☐

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	Examiner Name	Kaplan, Hal Ira
	Attorney Docket Number	WTCY-0026-P01

	2	International Application Serial No. PCT/US2009/058499, International Preliminary Report on Patentability issued on March 29, 2011, 5 pages.	☐
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	4	International Application Serial No. PCT/US2011/051634, International Search Report and Written Opinion mailed on January 06, 2012, 11 pages.	☐
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	6	KURS et al., "Optimized design of a low-resistance electrical conductor for the multimegahertz range," Applied Physics Letter, Volume 98, Issue 17, April 28, 2011, pp. 172504-1 - 172504-3.	☐
	7	KURS et al., "Simultaneous mid-range power transfer to multiple devices", Applied Physics Letters, Vol. 96, No. 044102, February 2, 2010, pp. 044102-1 - 044102-3.	☐
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First Named Inventor	Kesler, Morris P.
Art Unit	2836
Examiner Name	Kaplan, Hal Ira
Attorney Docket Number	WTCY-0026-P01

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☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/John A. Monocello, III/	Date (YYYY-MM-DD)	2012-09-10
Name/Print	John A. Monocello, III	Registration Number	51022

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12567716	KESLER ET AL.
	Examiner	Art Unit
	HAL KAPLAN	2836

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	01/30/2013								
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	Examiner Name	Hal Ira Kaplan
	Attorney Docket Number	WTCY-0026-P01

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/H.K./		US-5703461		Dec 30, 1997	Minoshima, Norimoto et al.	
/H.K./		US-5923544		Jul 13, 1999	Urano, Takashi	
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U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/H.K./		US-20050288741A1		Dec 29, 2005	Hassler Jr, William L., et al.	
/H.K./		US-20120228952A1		Sep 13, 2012	Hall, Katherine L., et al.	
/H.K./		US-20120228953A1		Sep 13, 2012	Kesler, Morris P., et al.	
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/H.K./		US-2012023 5501A1		Sep 20, 2012	Kesler, Morris P., et al.	
/H.K./		US-2012023 5502A1		Sep 20, 2012	Kesler, Morris P., et al.	
/H.K./		US-2012023 5503A1		Sep 20, 2012	Kesler, Morris P., et al.	
/H.K./		US-2012023 5504A1		Sep 20, 2012	Kesler, Morris P., et al.	
/H.K./		US-2012023 5505A1		Sep 20, 2012	Schatz, David A., et al.	
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/H.K./		US-2012023 5634A1		Sep 20, 2012	Hall, Katherine L., et al.	
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/H.K./		US-2012024 2225A1		Sep 27, 2012	Karalis, Aristeidis et al.	
/H.K./		US-2012024 8884A1		Oct 4, 2012	Karalis, Aristeidis et al.	

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	Attorney Docket Number	WTCY-0026-P01

/H.K./		US-20120248886A1		Oct 4, 2012	Kesler, Morris P., et al.	
/H.K./		US-20120248887A1		Oct 4, 2012	Kesler, Morris P., et al.	
/H.K./		US-20120248888A1		Oct 4, 2012	Kesler, Morris P., et al.	
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/H.K./		US-20120256494A1		Oct 11, 2012	Kesler, Morris P., et al.	
/H.K./		US-20120280765A1		Nov 8, 2012	Kurs, Andre B., et al.	

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/H.K./		DE-20016655U1			Feb 14, 2002	IC HAUS GMBH	English language translation	
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/H.K./		PCT/US2011/027868, , "International Application Serial No. PCT/US2011/027868, International Preliminary Report on Patentability mailed 09-20-12", WITRICITY CORPORATION et al, 8 pages	

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Examiner Signature	/Hal Kaplan/	Date Considered	01/29/2013

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☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Jeffrey Ambroziak/	Date (YYYY-MM-DD)	11-28-2012
Name/Print	Jeffrey Ambroziak	Registration Number	47387

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EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	156	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same size same wireless$2)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 16:29
L2	67	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same size same wireless$2) and 307/104.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 16:34
L11	78	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same resonat$3 same capacitor same coil same (characteristic adj size))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 16:53
L12	67	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same size same wireless$2) and 307/104.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 16:53
L15	20	witricity.as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 17:52
S27	12	("5703461" "5923544" "7919886" "8304935" "8324759").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 10:07
S28	10	("20050288741" "20120228952" "20120228953" "20120228954" "20120235500").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 10:13
S29	26	("20120235501" "20120235502"	US-PGPUB;	OR	ON	2013/01/29

		"20120235503" "20120235504" "20120235505" "20120235566" "20120235567" "20120235633" "20120235634" "20120239117" "20120242159" "20120242225" "20120248884").pn.	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			10:17
S30	12	("20120248886" "20120248887" "20120248888" "20120248981" "20120256494" "20120280765").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 10:19
S31	14	US-3780425-$.DID. OR US-3871176-$.DID. OR US-4095998-$.DID. OR US-4280129-$.DID. OR US-5053774-$.DID. OR US-5287112-$.DID. OR US-5455467-$.DID.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 10:33
S32	2	"5522856".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 10:47
S33	20	US-5565763-$.DID. OR US-5697956-$.DID. OR US-5742471-$.DID. OR US-5957956-$.DID. OR US-5993996-$.DID. OR US-6012659-$.DID. OR US-6066163-$.DID. OR US-6067473-$.DID. OR US-6108579-$.DID. OR US-6127799-$.DID.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 10:49
S34	2	"6207887".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 10:57
S35	20	US-6252762-$.DID. OR US-6483202-$.DID. OR US-6609023-$.DID. OR US-6631072-$.DID. OR US-6772011-$.DID. OR US-6858970-$.DID. OR US-6961619-$.DID. OR US-6967462-$.DID. OR US-7027311-$.DID. OR US-7035076-$.DID.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 10:58
S36	2	"7084605".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 11:04
S37	18	US-7127293-$.DID. OR US-7251527-$.DID. OR US-7288918-$.DID. OR US-7340304-$.DID. OR US-7885050-$.DID. OR US-8035255-$.DID. OR US-8076800-$.DID. OR US-8076801-$.DID. OR US-8084889-$.DID. OR US-8097983-$.DID.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	ON	2013/01/29 11:07

			IBM_TDB			
S38	6	"8106539".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 11:14
S39	16	US-8115448-$.DID. OR US-5940509-$.DID. OR US-6664770-$.DID. OR US-7514818-$.DID. OR US-7795708-$.DID. OR US-8022576-$.DID. OR US-5408209-$.DID. OR US-5630835-$.DID.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 11:18
S40	2	"5821731".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 11:19
S41	8	("6535133" "7233137" "7863859" "7999506").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 11:27
S42	10	("20020167294" "20030124050" "20030126948" "20040142733" "20040233043").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 11:29
S43	21	("20050021134" "20050033382" "20050104453" "20050194926" "20050253152" "20050288742" "20060164866" "20060184209" "20060184210" "20060199620" "20060214626").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 11:33
S44	4	("0645576" "0649621").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 11:36
S45	20	US-20060238365-$.DID. OR US-20060281435-$.DID. OR US-20070010295-$.DID. OR US-20070016089-$.DID. OR US-20070024246-$.DID. OR US-20070117596-$.DID. OR US-20070176840-$.DID. OR US-20070208263-$.DID. OR US-20080036588-$.DID. OR US-20080154331-$.DID.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 11:38
S46	2	"20080300657".pn.	US-PGPUB;	OR	ON	2013/01/29

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			11:38
S47	6	US-20080300660-$.DID. OR US-20090058361-$.DID. OR US-20090072782-$.DID.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 12:50
S48	22	("20080300660" "20090058361" "20090072782" "20100156355" "20100235006" "20110004269" "20110074346" "20120007441" "20120062345" "20120068549" "20120086284").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 13:42
S49	22	("20120086867" "20120091794" "20120091795" "20120091796" "20120091797" "20120091819" "20120091820" "20120091949" "20120091950" "20120098350" "20120112531")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 13:54
S50	15	("20120112532" "20120112534" "20120112535" "20120112536" "20120112538" "20120112691" "20120119575" "20120119576" "20120119698" "20120119569" "20110115303").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 13:56
S51	22	("20040100338" "20040227057" "20060066443" "20060202665" "20070013483" "20070021140" "20070096875" "20070145830" "20080266748" "20080273242" "20110254503").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 13:58
S52	18	("20110049996" "20110049998" "20110074218" "20120032522" "20110074347" "20110089895" "20110095618" "20110121920" "20110140544" "20110148219" "20110162895").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 14:02
S53	21	("20110169339" "20110181122" "20110193416" "20110193419" "20110198939" "20110221278" "20110227528" "20110227530" "20110241618" "20110254377" "20040189246").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 14:03
S54	22	("20070069687" "20090261778" "20120184338" "20120139355" "20120153732" "20120153733" "20120153734" "20120153735" "20120153736" "20120153737" "20120153738").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	ON	2013/01/29 14:06

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			IBM_TDB			
S55	14	("20120153893" "2002013642" "20050140482" "20100060077" "20120206096" "20120223573").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 14:07
S56	100	(wireless with (power energy) with (trnasfer$4 transmi$5) and (resonat$3 with (q-factor (q adj factor) (quality adj factor)))) and @pd>="20120622"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 15:14
S57	188	307/104.ccls. and (alternating-current (alternating adj current) (ac adj power)) and @pd>="20120622"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 15:25
S58	37	307/104.ccls. and ((alternating-current (alternating adj current) (ac adj power)) near3 load) and @pd>="20120622"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 15:28
S59	38	kesler-morris-p.in. and @pd>="20120620"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 15:31
S60	35	karalis-aristeidis.in. and @pd>="20120620"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 15:51
S61	37	kurs-andre-b.in. and @pd>="20120620"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 15:55
S62	25	campanella-andrew-j.in. and @pd>="20120620"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/29 15:56
S63	3	fiorello-ron.in. and @pd>="20120620"	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	2013/01/29 15:58

			JPO; DERWENT; IBM_TDB			
S64	24	li-qiang.in. and @pd>="20120621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 10:55
S65	12	kulikowski-konrad-j.in. and @pd>="20120621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 10:58
S66	10	giler-eric-r.in. and @pd>="20120621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 11:00
S67	0	pergal-frank-j.in. and @pd>="20120621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 11:03
S68	12	schatz-david-a.in. and @pd>="20120621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 11:04
S69	37	hall-katherine-l.in. and @pd>="20120621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 11:05
S70	38	soljacic-marin.in. and @pd>="20120621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 11:06
S71	38	kesler-morris-p.in. and @pd>="20120621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 11:08
S72	35	karalis-aristeidis.in. and @pd>="20120621"	US-PGPUB; USPAT;	OR	ON	2013/01/30 11:13

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S73	306	307/104.ccls. and @pd>="20120621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 11:14
S74	24	307/104.ccls. and (resonator with coil with turn) and @pd>="20120622"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 11:21
S75	48	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same (wireless contactless no-contact non-contact ((non no) adj contact)) same generat$3 and (axis near3 symmetr$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 11:44
S76	65	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same (wireless contactless no-contact non-contact ((non no) adj contact)) same generat$3 and symmetr$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 14:24
S77	43	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same (wireless contactless no-contact non-contact ((non no) adj contact)) same generat$3 and symmetr$4) and (ground with (generat$3 power load) with symmetr$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/01/30 14:29

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	67	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same size same wireless$2) and 307/104.ccls.	US-PGPUB; USPAT; UPAD	OR	ON	2013/01/30 16:44
L7	78	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same resonat$3 same capacitor same coil same (characteristic adj size))	US-PGPUB; USPAT; UPAD	OR	ON	2013/01/30 16:48
L8	90	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same resonat$3 same capacitor same coil same size)	US-PGPUB; USPAT; UPAD	OR	ON	2013/01/30 16:49
L10	55	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same resonat$3 same capacitor same coil same size) and	US-PGPUB; USPAT;	OR	ON	2013/01/30 16:50

		307/104.ccls.	UPAD			
L13	43	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same (wireless contactless no-contact non-contact ((non no) adj contact)) same generat$3 and symmetr$4) and (ground with (generat$3 power load) with symmetr$4)	US-PGPUB; USPAT; UPAD	OR	ON	2013/01/30 16:56
L14	66	(resona$4 same (q-factor (q adj factor) (quality adj factor)) same (wireless contactless no-contact non-contact ((non no) adj contact)) same generat$3 and symmetr$4)	US-PGPUB; USPAT; UPAD	OR	ON	2013/01/30 16:56

1/ 30/ 2013 5:57:24 PM
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Issue Classification

Application/Control No.	Applicant(s)/Patent Under Reexamination
12567716	KESLER ET AL.
Examiner	**Art Unit**
HAL KAPLAN	2836

CPC

Symbol				Type	Version
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CPC Combination Sets

Symbol				Type	Set	Ranking	Version
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			/				

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS
307	104

INTERNATIONAL CLASSIFICATION CLAIMED					NON-CLAIMED				
H	0	1	F	37 / 00 (2006.01.01)					
H	0	1	F	38 / 00 (2006.01.01)					

CROSS REFERENCE(S)

CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				

NONE (Assistant Examiner) (Date)	**Total Claims Allowed:** 17	
/HAL KAPLAN/ Primary Examiner.Art Unit 2836 (Primary Examiner) (Date)	O.G. Print Claim(s) 7	O.G. Print Figure 11(c)

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12567716	KESLER ET AL.
	Examiner	**Art Unit**
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NONE (Assistant Examiner) (Date)	**Total Claims Allowed:** 17	
/HAL KAPLAN/ Primary Examiner.Art Unit 2836 (Primary Examiner) (Date)	O.G. Print Claim(s) 7	O.G. Print Figure 11(c)

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
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☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1	11	17												
	2	12	18												
	3	13	19												
	4	14	20												
	5	15	21												
	6	16	22												
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6	12														
7	13														
8	14														
9	15														
10	16														

NONE (Assistant Examiner) (Date)	**Total Claims Allowed:** 17	
/HAL KAPLAN/ Primary Examiner.Art Unit 2836 (Primary Examiner) (Date)	O.G. Print Claim(s) 7	O.G. Print Figure 11(c)

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Page 795

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/567,716	09/25/2009	INV001Morris P. Kesler	WTCY-0026-P01	4901

87084 7590 03/22/2013

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Minneapolis, MN 55402

EXAMINER	
KAPLAN, HAL IRA	

ART UNIT	PAPER NUMBER
2836	

NOTIFICATION DATE	DELIVERY MODE
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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
12/567,716	25 September, 2009	KESLER ET AL.	WTCY-0026-P01

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2836	20130315

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Commissioner for Patents

The IDS referred to in the Supplemental IDS cover later dated 2/13/2013 has not been received, but 13 references dated 2/13/2013 have been received.

/Hal I. Kaplan/
Primary Examiner, Art Unit 2836

PTO-90C (Rev.04-03)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Morris P. Kesler, et al. Examiner: Hal Ira Kaplan
Serial No.: 12/567,716 Group Art Unit: 2836
Confirmation No.: 4901
Filed: Sep 25, 2009 Docket No.: WTCY-0026-P01
Title: WIRELESS ENERGY TRANSFER SYSTEMS

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq*., the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application.

Further, Applicants respectfully direct the Examiner's attention to the below-listed related non-published applications. These items, which refer to non-published applications that, at this time and according to each application's current prosecution history, may be related to the prosecution of the present case. Related published applications are provided on the accompanying form SB08 where applicable. Applicants' reference to the co-pending applications is not an admission of the materiality of any application or the prosecution history thereof, nor is it an admission that any of the below or attached co-pending applications constitute prior art.

UN PUB. APPLICATION NO.	FILING DATE	ATTORNEY DOCKET NO.
1. 13/608,956	September 10, 2012	WTCY-0064-P01
2. PCT/US12/54490	September 10, 2012	WTCY-0064-PWO
3. 13/612,494	September 12, 2012	WTCY-0065-P01
4. 13/621,503	September 17, 2012	WTCY-0005-P01
5. 13/654,980	October 18, 2012	WTCY-0070-P01
6. PCT/US12/60793	October 18, 2012	WTCY-0070-PWO
7. 13/668,756	November 5, 2012	WTCY-0071-P01
8. PCT/US12/63530	November 5, 2012	WTCY-0071-PWO
9. 13/752,169	January 28, 2013	WTCY-0075-P01

10. PCT/US13/23478	January 28, 2013	WTCY-0075-PWO

Pursuant to 37 C.F.R. §1.97(c)(2), Applicants have included the fee of $180.00 as set forth in 37 C.F.R. §1.17(p). Applicants hereby authorize the Commissioner to charge any additional fees, or to credit any overage, to Deposit Account 50-3912.

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Respectfully submitted,

MORRIS P. KESLER, ET AL.

By their Representatives,

Date February 13, 2013

By /John A. Monocello, III/
John A. Monocello, III
GTC Law Group LLP & Affiliates
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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87084 7590 04/04/2013

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2836	

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ART UNIT	PAPER
2836	20130327

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

The references cited in the IDS dated 2/13/2013 have been considered.

/Hal I. Kaplan/
Primary Examiner, Art Unit 2836

PTO-90C (Rev.04-03)

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Field

Modified PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2836
Examiner Name	Hal Ira Kaplan
Attorney Docket Number	WTCY-0026-P01

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/H.K./	1	20120313449	A1	2012-12-13	Kurs, Andre B., et al.	
/H.K./	2	20120313742	A1	2012-12-13	Kurs, Andre B., et al.	
/H.K./	3	20130007949	A1	2013-01-10	Kurs, Andre B., et al.	
/H.K./	4	20130020878	A1	2013-01-24	Karalis, Aristeidis et al.	
/H.K./	5	20130033118	A1	2013-02-07	Karalis, Aristeidis et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
/H.K./	6	09298847	JP	A	1997-11-18	CHIBA, YOJI	English Abstract Included	☐
/H.K./	7	10164837	JP	A	1998-06-19	KIKUCHI, AKIHIKO et al.	English Abstract Included	☐
/H.K./	8	2001309580	JP	A	2001-11-02	MUTO, MOTOHARU et al.	English Abstract Included	☐
/H.K./	9	2002010535	JP		2002-01-11	Hideaki, Abe et al.	English Abstract Included	☐
/H.K./	10	2009062438	WO	A1	2009-05-22	HO, Wing C., et al.		☐
/H.K./	11	2010104569	WO	A1	2010-09-16	Derbas, Justin R.,		☐

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Attorney Docket Number	WTCY-0026-P01

						et al.		
/H.K./	12	2011061388	WO	A1	2011-05-26	Saunamaki, Esa		☐
/H.K./	13	2012170278	WO	A2	2012-12-13	SCHATZ, David et al.		☐
/H.K./	14	2013013235	WO	A2	2013-01-24	KARALIS, Aristeidis et al.		☐
/H.K./	15	2012170278	WO	A3	2013-01-31	Schatz, David A., et al.		☐

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
/H.K./	16	12/613,686, Application Serial No. 12/613,686, Notice of Allowance mailed 1-6-2011, 1/6/2011, 10 pages	☐
/H.K./	17	JACKSON, J. D. , "Classical Electrodynamics", 3rd Edition, Wiley, New York, 1999, pp. 201-203	☐
/H.K./	18	PCT/US2012/049777, International Application Serial No. PCT/US2012/049777, International Search Report and Written Opinion mailed 01-23-13", 10 pages	☐

EXAMINER SIGNATURE

Examiner Signature	/Hal Kaplan/	Date Considered	03/27/2013

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Modified PTO/SB/08a (01-10)
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Art Unit	2836
Examiner Name	Hal Ira Kaplan
Attorney Docket Number	WTCY-0026-P01

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.
[4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

Modified PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2836
Examiner Name	Hal Ira Kaplan
Attorney Docket Number	WTCY-0026-P01

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☒ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/John A. Monocello/	Date (YYYY-MM-DD)	2013-02-13
Name/Print	John A. Monocello	Registration Number	51022

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Electronic Patent Application Fee Transmittal

Application Number:	12567716
Filing Date:	25-Sep-2009
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Filer:	Jeffrey R. Ambroziak/Jennifer Sammartin
Attorney Docket Number:	WTCY-0026-P01

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Publ. Fee- Early, Voluntary, or Normal	1504	1	300	300
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	1780	1780

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**2080**

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

GTC Law Group LLP & Affiliates
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Jennifer Sammartin	(Depositor's name)
/Jennifer Sammartin/	(Signature)
May 8, 2013	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/567,716	09/25/2009	Morris P. Kesler	WTCY-0026-P01	4901

TITLE OF INVENTION:

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1780	$300	$2080	05/14/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 GTC Law Group LLP & Affiliates
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE	(B) RESIDENCE: (CITY and STATE OR COUNTRY)
WiTricity Corporation	Watertown, MA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☑ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

☑ Issue Fee
☑ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _

4b. Payment of Fee(s):

☐ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☑ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 50-5087 .

5. **Change in Entity Status** (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /Jeffrey R. Ambroziak/ Date May 8, 2013

Typed or printed name Jeffrey R. Ambroziak Registration No. 47387

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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InductEV, Inc.
Exhibit 1002
Page 808

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	15729514
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	87084
Filer:	Jeffrey R. Ambroziak/Jennifer Sammartin
Filer Authorized By:	Jeffrey R. Ambroziak
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	08-MAY-2013
Filing Date:	25-SEP-2009
Time Stamp:	22:57:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$2080
RAM confirmation Number	7189
Deposit Account	505087
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	WTCY-0026-P01_Payment-of-Issue-Fee.pdf	222247 d83f972ffb3447bd5b02e0ed1de912832185ccb4	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32135 afcd7f639aae03ad630b1bf29ae5b551605b45ac	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	254382		

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.K./

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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known

Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	4	of	6

Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
		2010/0225270	Sep 9, 2010	Jacobs, Paul E., et al.	
		2010/0225271	Sep 9, 2010	Oyobe, Hichirosai et al.	
		2010/0225272	~~Aug 12, 2010~~	Kirby, Miles A., et al.	September 9, 2010
		2010/0231053	Sep 16, 2010	Karalis, Aristeidis et al.	
		2010/0231163	Sep 16, 2010	Mashinsky, Alex	
		2010/0237706	Sep 23, 2010	Karalis, Aristeidis	
		2010/0237707	Sep 23, 2010	Karalis, Aristeidis	
		2010/0237708	Sep 23, 2010	Karalis, Aristeidis et al.	
		2010/0237709	Sep 23, 2010	Hall, Katherine L., et al.	
		2010/0244576	Sep 30, 2010	Hillan, John et al.	
		2010/0244577	Sep 30, 2010	Shimokawa, Satoshi	
		2010/0244578	Sep 30, 2010	Yoshikawa, Hiroyasu et al.	
		2010/0244579	Sep 30, 2010	Sogabe, Haruhiko et al.	
		2010/0244580	Sep 30, 2010	Uchida, Akiyoshi et al.	
		2010/0244581	Sep 30, 2010	Uchida, Akiyoshi	
		2010/0244582	Sep 30, 2010	Yoshikawa, Hiroyasu	
		2010/0244583	Sep 30, 2010	Shimokawa, Satoshi	
		2010/0244839	Sep 30, 2010	Yoshikawa, Hiroyasu	
		2010/0248622	Sep 30, 2010	Kirby, Miles A., et al.	
		2010/0253152	Oct 7, 2010	Karalis, Aristeidis	
		2010/0253281	Oct 7, 2010	Li, Peng	
		2010/0256831	Oct 7, 2010	Abramo, Keith et al.	
		2010/0259108	Oct 14, 2010	Giler, Eric R., et al.	
		2010/0259109	Oct 14, 2010	Sato, Kazushiro	
		2010/0264745	Oct 21, 2010	Karalis, Aristeidis et al.	
		2010/0264746	Oct 21, 2010	Kazama, Satoshi et al.	
		2010/0264747	Oct 21, 2010	Hall, Katherine L., et al.	
		2010/0276995	Nov 4, 2010	Marzetta, Thomas L., et al.	
		2010/0277003	Nov 4, 2010	Von Novak, William H., et al.	
		2010/0277004	Nov 4, 2010	Suzuki, Masayuki et al.	
		2010/0277005	Nov 4, 2010	Karalis, Aristeidis et al.	
		2010/0277120	Nov 4, 2010	Cook, Nigel P., et al.	
		2010/0277121	Nov 4, 2010	Hall, Katherine L., et al.	
		2010/0289341	Nov 18, 2010	Ozaki, Ernest T., et al.	

Change(s) applied to document, /J.G./ 4/10/2013

EXAMINER /Hal Kaplan/ **DATE CONSIDERED** 06/20/2012

Substitute Disclosure Statement Form (PTO-1449)
* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.K./

Date Received: 2/22/2011

PTO/SB/08a (01-08)
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Substitute for form 1449A/PTO

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(Use as many sheets as necessary)

Complete if Known	
Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	1	of	6	Attorney Docket No: WTCY-0026-P01

Change(s) applied to document, /J.G./ 4/10/2013

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
		2005/0288739	Dec 29, 2005	Hassler, Jr., William L., et al.	
		2005/0288740	Dec 29, 2005	Hassler, Jr., William L.	
		2007/0182367	Aug 9, 2007	Partovi, Afshin	
		2008/0067874	Mar 20, 2008	Tseng, Ryan	
		2008/0265684	Oct 30, 2008	Farkas, Laszlo	
20100109604		~~2009/0067108~~	May 6, 2010	Boys, John T., et al.	
		2009/0085408	Apr 2, 2009	Bruhn, Alfred et al.	
		2009/0096413	Apr 16, 2009	Partovi, Afshin et al.	
		2009/0108679	Apr 30, 2009	Porwal, Gunjan	
		2009/0108997	Apr 30, 2009	Petterson, Mike et al.	
		2009/0146892	Jun 11, 2009	Shimizu, Kanjiro et al.	
		2009/0160261	Jun 25, 2009	Elo, Harri H.	
		2009/0174263	Jul 9, 2009	Baarman, David W., et al.	
		2009/0189458	Jul 30, 2009	Kawasaki, Koji	
		2009/0237194	Sep 24, 2009	Waffenschmidt, Eberhard et al.	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	12567716
Filing Date	2009-09-25
First Named Inventor	Kesler, Morris P.
Art Unit	2836
Examiner Name	Kaplan, Hal Ira
Attorney Docket Number	WTCY-0026-P01

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Change(s) applied to document, /J.C./ 4/11/2013

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	102239633	CN	A	2011-11-09	WiTricity Corporation	English Abstract Only	☐
	2	2340611	EP	A1	2011-07-06	WiTricity Corporation	English Abstract Only	☐
	3	2396796	EP	A1	2011-12-21	WiTricity Corporation	English Abstract Only	☐

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Complete if Known

Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	3	of	6	Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
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		2010/0171370	Jul 8, 2010	Karalis, Aristeidis et al.	
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Change(s) applied to document, /J.G./ 4/11/2013		2010/0201204	~~Nov 12, 2010~~	Sakoda, Shimpel et al.	August 12, 2010
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	5	of	14

Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
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Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	4	of	14

Attorney Docket No: WTCY-0026-P01

US PATENT DOCUMENTS

Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or RelevantFigures Appear
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Application Number	12/567,716
Filing Date	Sep 25, 2009
First Named Inventor	Morris P. Kesler
Art Unit	2828
Examiner Name	KAPLAN, Hal Ira

Sheet	7	of	14	Attorney Docket No: WTCY-0026-P01

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Examiner Initials*	Cite No [1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	NPL-82	, ""HF Antenna Design Notes - Technical Application Report"", Texas Instruments Literature Number 11/08/003 9/2003 , 47 pages	
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/567,716	06/11/2013	8461719	WTCY-0026-P01	4901

87084 7590 05/22/2013

GTC Law Group LLP & Affiliates
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 779 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

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Aristeidis Karalis, Boston, MA;
Andre B. Kurs, Chestnut Hill, MA;
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Konrad J. Kulikowski, Somerville, MA;
Eric R. Giler, Wellesley, MA;
Frank J. Pergal, Gloucester, MA;
David A. Schatz, Needham, MA;
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STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Kesler, et al.

Application No./Patent No.: 12/567,716 / 8,461,719 Filed/Issue Date: 9/25/2009 / 6/11/2013

Entitled: Wireless Energy Transfer Systems

WiTricity Corporation
(Name of Assignee)

a corporation
(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

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The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/William E. Hunter, Reg. No. 47671/	October 23, 2014
Signature	Date
William E. Hunter , 47,671	(858) 678-5070
Printed or Typed Name	Telephone Number
Attorney for Assignee	
Title	

23308512.doc

Electronic Acknowledgement Receipt

EFS ID:	20499002
Application Number:	12567716
International Application Number:	
Confirmation Number:	4901
Title of Invention:	WIRELESS ENERGY TRANSFER SYSTEMS
First Named Inventor/Applicant Name:	Morris P. Kesler
Customer Number:	87084
Filer:	William E. Hunter/Cheryl Forrest
Filer Authorized By:	William E. Hunter
Attorney Docket Number:	WTCY-0026-P01
Receipt Date:	23-OCT-2014
Filing Date:	25-SEP-2009
Time Stamp:	14:54:30
Application Type:	Utility under 35 USC 111(a)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	0071001-POA.pdf	144158 dcc5420a5136144ace2539b14151812099d4d08e	no	2

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/80 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☒ Practitioners associated with the Customer Number: 26207

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

☒ The address associated with Customer Number: 26207

OR

☐ Firm or Individual Name	Fish & Richardson P.C.		
Address	P.O. Box 1022		
City	Minneapolis	State MN	Zip 55440-1022
Country	United States		
Telephone		Email	

Assignee Name and Address:
WiTricity Corporation
149 Grove Street
Watertown, MA 02472

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	9/29/14
Name	ALEXANDER GRUZEN	Telephone	617.744.8109
Title	CEO		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/567,716	09/25/2009	Morris P. Kesler	WTCY-0026-P01

CONFIRMATION NO. 4901

POWER OF ATTORNEY NOTICE

87084
GTC Law Group LLP & Affiliates
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

OC000000071618966

Date Mailed: 10/31/2014

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/23/2014.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/rmturner myles/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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12/567,716	09/25/2009	Morris P. Kesler	

CONFIRMATION NO. 4901

POA ACCEPTANCE LETTER

26207
FISH & RICHARDSON P.C.
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

OC000000071619020

Date Mailed: 10/31/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/23/2014.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/rmturner myles/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	REQUEST ID
12/567,716	8461719	2836	101023

PAIR Correspondence Address/Fee Address Change

The following fields have been changed to Customer Number 166872 on 12/03/2019 via Private PAIR in view of the certification copied below that authorized the change.

- Maintenance Fee Address

The address for Customer Number 166872 is:
166872
WiTricity Corporation
57 Water Street
Watertown, MA 02472

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

An attorney or Agent of Record registered to practice before the Patent and Trademark Office who has been given power of attorney in this application

Signature:	/Misha K. Hill/
Name:	Misha K. Hill
Registration Number:	59737