

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

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

To:

see form PCT/ISA/220

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.  
PCT/EP2019/058328

International filing date (day/month/year)  
02.04.2019

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC  
INV. G01R33/38 ADD. G01R33/3815 H01F6/06

Applicant  
SIEMENS HEALTHCARE LIMITED

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 and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will 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 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:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0  
Fax: +49 89 2399 - 4465


Date of completion of this opinion

see form  
PCT/ISA/210

Authorized Officer

Streif, Jörg Ulrich

Telephone No. +49 89 2399-0



---

**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, this opinion has been established on the basis of a sequence listing:
  - a.  forming part of the international application as filed:
    - in the form of an Annex C/ST.25 text file.
    - on paper or in the form of an image file.
  - b.  furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
  - c.  furnished subsequent to the international filing date for the purposes of international search only:
    - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
    - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4.  In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

---

**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)	Yes: Claims	<u>3, 9, 10</u>
	No: Claims	<u>1, 2, 4-8, 11</u>
Inventive step (IS)	Yes: Claims	<u>3, 9</u>
	No: Claims	<u>1, 2, 4-8, 10, 11</u>
Industrial applicability (IA)	Yes: Claims	<u>1-11</u>
	No: Claims	

2. Citations and explanations

**see separate sheet**

---

**Box No. VI Certain documents cited**

---

1. Certain published documents (Rules 43bis.1 and 70.10)

and / or

2. Non-written disclosures (Rules 43bis.1 and 70.9)

**see form 210**

---

**Box No. VII Certain defects in the international application**

---

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

---

**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:

**see separate sheet**

**Re Item V.**

**1 The following documents are referred to in this written opinion.**

- D1 US 2010/295640 A1 (TAMURA HAJIME [JP]) 25 November 2010 (2010-11-25)
- D2 JP S61 99046 U (TOSHIBA) 25 June 1986 (1986-06-25)
- D3 EP 0 452 046 A2 (GEN ELECTRIC [US]) 16 October 1991 (1991-10-16)
- D4 US 2011/291782 A1 (CALVERT SIMON JAMES [GB]) 1 December 2011 (2011-12-01)

**2 Lack of novelty and/or of an inventive step (Art. 33 PCT)**

**2.1 Independent claim 1**

**2.1.1** The subject-matter of claim 1 lacks novelty with respect to each of the documents D1-D3 for the following reasons.

For instance, document D1 discloses (references in square brackets apply thereto):

***An electromagnet assembly for an MRI apparatus***

[The MRI magnet assembly shown in Figs. 6 and 7 can be identified with the "electromagnet assembly for an MRI apparatus" defined in the claim. In this regard, compare with paragraphs 2, 44 add 45 of the description.],

***comprising:***

***an electromagnet for a MRI apparatus***

[In Fig. 6, the combination of the main coils 2, main bobbins 21, shield coils 3,

shield bobbins 31 and beam 35 can be identified with the "electromagnet for a MRI apparatus" defined in the claim. In this respect, compare also with paragraphs 44 and 45 of the description.],

***the electromagnet comprising:***

***a coil for generating a magnetic field***

[Anyone of the shield coils 3 shown in Fig. 6 can be identified with the "coil for generating a magnetic field" defined in the claim.],

***the coil having a first axially outer surface***

[From Fig. 6, it can be inferred that anyone of the shield coils 3 had two axially outer surfaces. Anyone of these surfaces can be identified with the "first axially outer surface" defined in the claim.],

***a support element for mounting the coil in the MRI apparatus***

[From Fig. 6, it can be inferred that anyone of the shield coils 3 had an associated coil bobbin 31. This bobbin 31 can be identified with the "support element for mounting the coil in the MRI apparatus" defined in the claim.];

***wherein the support element is bonded to the first axially outer surface of the coil***

[According to paragraph 29 of the description, a shield coil was formed by winding a superconductive wire around the shield bobbin wherein the shield coil was fixed with an epoxy resin. This implies that "the support element is bonded to the first axially outer surface of the coil" as defined in the claim.];

***a support structure comprising a single support plate***

[Anyone of the beams 35 shown in Figs. 6 and 7 can be identified with the

"single support plate" and, in turn, also with the "support structure" comprising this plate.

According to paragraph 45, the beam 35 was a square timber, i.e. a plate as defined in the claim.];

***wherein the support element is mounted to the single support plate, and wherein the support element is mechanically fastened to the single support plate***

[According to paragraph 45 of the description, the shield bobbin 31 was fixed and coupled with the beam 35 through welding, i.e. shield bobbin 31 was "mounted to" and "mechanically fastened to" the beam 35 as defined in the claim.].

In a similar way, the lack of novelty can be shown with respect to each of the **documents D2 and D3** (see the passages of these documents cited in the search report).

More specifically, with respect to **document D2**, see the arrangement shown in Figs. 3 and 4 thereof wherein the combination of elements 4a, 4b and 4c can be identified with the "support element" defined in the claim and wherein the horizontal bar shown at the bottom of Fig. 3 to which element 4 shown in Fig. 3 was mechanically connected can be identified with the "single support plate" defined in the claim.

With respect to **document D3**, compare with the embodiment shown in Fig. 4 wherein element 23 can be identified with the "support element" defined in the claim and wherein element 67 (being a bar according to col. 5, line 21 of the description) can be identified with the "single support plate" defined in the claim.

- 2.1.2 In a way similar to that of the previous item, it can be shown that the subject-matter of **claim 1** differs from that of **document D4** only in that the support structure comprises a **plate rather than a rod** as in D4 (compare with the embodiment shown in Fig. 1 of D4 wherein element 16 can be identified with the

"support element" defined in the claim and rod 18 can be identified with the "support structure" defined in the claim).

However, it would appear that the skilled person would replace the rod shown in Fig. 1 of D4 by an element having a different cross section solely in accordance with circumstances, without exercising inventive skill.

## 2.2 **Dependent claims 2, 4-8, 10, 11**

The additional features of these dependent claims are either known from, or rendered obvious by the available prior art (see the passages of D1-D4 cited in the search report).

More specifically with respect to **claim 2**, compare e.g. with the mechanical connection in the form of welded connection according to D1, paragraph 45.

With respect to **claim 4**, compare with the plurality of beams 35 shown in Fig. 7 of D1.

With respect to **claim 5**, compare with the shape of the shield bobbin 31 shown in Fig. 6 of D1.

With respect to **claims 6 and 7**, compare with the epoxy resin mentioned in paragraph 29 of D1 which would appear to be "suitable for cryogenic applications" and to result in "a monolithic structure" as defined in the claims.

With respect to **claim 8**, compare with the mechanical connection between elements 23 and 67 in Fig. 4 of D3 wherein the threaded stud 71 fitted around roll pin 73 (compare with D3, col. 5, lines 20-24) can be identified with the "extension tube" defined in the claim.

With respect to **claim 10**, compare with the pinned connection shown in Fig. 4 of D3.

With respect to **claim 11**, compare e.g. with paragraph 2 of D1.

**Re Item VII.**

**3 Certain defects**

- 3.1 According to Rule 5.1a (ii) PCT, documents D1-D4 should have been identified in the description and briefly discussed.
- 3.2 The independent claims should have been drafted in the two-part form in accordance with Rule 6.3(b) PCT, with those features known from the closest prior art (probably document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

**Re Item VIII.**

**4 Lack of clarity (Art. 6 PCT)**

**4.1 Claim 1**

The intended scope of the expression "a support structure **comprising a single support plate**" (emphasis added) is unclear and should have been defined. In this regard, it would appear that the use of the word "comprising" in said expression does not exclude the possibility of further elements being present, i.e. the presence of said "single support plate" and one or more further support plates.

**4.2 Claim 2**

According to claim 1 upon which claim 2 is dependent, the "support element is mechanically fastened to the single support plate" wherein claim 1 further defines that the "support structure" comprises the "single support plate".

It would therefore appear that the feature of claim 2 is already inherent in the assembly defined by claim 1. As a consequence, it is not apparent which additional limitations going beyond those of claim 1 were intended to be defined



by claim 2. The presence of claim 2 therefore results in doubts on the scope of claim 1.

#### 4.3 **Drawings**

Pages 1-5 of the drawings were numbered with "x/5" (where  $x = 1, 2, \dots, 5$ ) although the set of drawings comprises six pages in total.