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Datasheet for the decision of 16 October 2013

Case Number: T 0782/09 - 3.4.01

Application Number: 02024130.3

Publication Number: 1340993

IPC: G01R 33/34

Language of the proceedings: EN

Title of invention:
Nuclear magnetic resonance apparatus probe

Applicant:
Hitachi, Ltd.

Headword:
-

Relevant legal provisions:
EPC Art. 123(2)

Relevant legal provisions (EPC 1973):
EPC Art. 84

Keyword:
"Main request: Clarity (no), Auxiliary Request: Amendments allowable (no)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0782/09 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 16 October 2013

Appellant: (Applicant)
Hitachi, Ltd.
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Representative:
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Decision under appeal:
Decision of the Examining Division of the European Patent Office posted 23 October 2008 refusing European patent application No. 02024130.3 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: G. Assi
Members: T. G. Zinke
M. J. Vogel

Summary of Facts and Submissions

I. The appeal filed on 5 January 2009 lies from the decision of the Examining Division, posted on 23 October 2008, refusing European patent application No. 02 024 130.3 published with the publication No. 1 340 993. The appeal fee was paid on the same day. The statement setting out the grounds of appeal was filed on 27 February 2009.

II. In the decision under appeal, the Examining Division stated that the subject-matter of independent claim 1 according to the then pending main request did not fulfil the requirements of Article 84 EPC 1973 and of Articles 52(1) EPC and 56 EPC 1973. Further, it was held that the subject-matter of independent claims 1 of a first and second auxiliary request also did not fulfil these requirements, respectively.

With regard to clarity, the examining division objected against the use of the direction of *"a static magnetic field"* for specifying the arrangement of coils of the claimed NMR apparatus probe, the *"static magnetic field"* being not generated by the probe itself. Further features in the independent claims referred to *"a sample"* or to *"a resonant circuit"* that were also not part of the probe and, therefore, made the wording of the claim unclear.

III. In the notice of appeal the appellant (applicant) requested to set aside the decision under appeal and to grant a patent. Together with the statement of grounds the appellant filed a set of claims 1 to 6 according to a main request (which is identical to the claim set of

the main request underlying the decision under appeal) and a set of claims 1 to 4 according to an auxiliary request.

IV. In the statement of grounds the appellant argued that the objections of lack of clarity in the decision under appeal were unfounded since the examining division itself indicated how the claimed wording should be understood.

Further, the applicant provided arguments in favour of novelty and inventive step of the subject-matter of claim 1 of the main request. With regard to the auxiliary request, the appellant provided a basis for the amendments made and pled for novelty and inventive step.

V. In a communication of 13 June 2013 the Board summoned for oral proceedings to take place on 16 October 2013 and informed the appellant about the issues to be discussed.

VI. The appellant did not attend the oral proceedings as announced by letter of 31 July 2013.

VII. Independent claim 1 of the main request reads as follows:

1. A nuclear magnetic resonance apparatus probe comprising:
a solenoid coil (302) having a central axis in a direction perpendicular to the direction of a static magnetic field (305); and

a pair of saddle type coils (303a, 303b) for generating a magnetic field in a direction perpendicular to the direction of the static magnetic field (305) and to the central axis of the solenoid coil (302),
wherein
the saddle type coils (303a, 303b) are arranged opposite to each other to surround the outer periphery of the solenoid coil (302) and are adapted to irradiate a sample with an RF magnetic field to produce nuclear magnetic resonance,
the solenoid coil (302) is adapted to receive a free induction decay (FID) signal emitted from the sample, and
the resonance frequency of the saddle type coils (303a, 303b) coincides with that of the solenoid coils (302).

Independent claim 1 of the auxiliary request reads:

1. A nuclear magnetic resonance apparatus probe in a nuclear magnetic resonance apparatus for analyzing organic substances, comprising:
a solenoid coil (302) having a central axis in a direction perpendicular to the direction of a static magnetic field (305); and
a pair of saddle type coils (303a, 303b) for generating a magnetic field in a direction perpendicular to the direction of the static magnetic field (305) and to the central axis of the solenoid coil (302),
wherein
the saddle type coils (303a, 303b) are arranged opposite to each other to surround the outer periphery of the solenoid coil (302) and are adapted to irradiate a sample with an RF magnetic field to produce nuclear magnetic resonance,

the strength of the RF magnetic field is one order of magnitude greater than that of a medical MRI computerized tomography scanner,
the solenoid coil (302) is adapted to receive a free induction decay (FID) signal emitted from the sample,
the resonance frequency of the saddle type coils (303a, 303b) coincides with that of the solenoid coils (302), and
the solenoid coil (302) and the saddle type coils (303a, 303b) are made of a conductor wire having a permeability close to 1.

Reasons for the Decision

1. The appeal is admissible.

2. *Main Request*

2.1 *Article 84 EPC 1973*

Contrary to the position of the appellant in the statement of grounds, the reason for formulating claims in a "*clear and concise*" way (Article 84 EPC 1973) is not only that a comparison to the prior art should be feasible, but also that the extent of protection (Article 69(1) EPC) can be determined.

2.1.1 The Board agrees with the examining division that in claim 1 of the main request the mention of a "*static magnetic field*" is doubtful, because such a field cannot characterize the NMR apparatus probe. Rather, it is unclear whether the subject-matter of the claim concerns an NMR apparatus probe, an NMR apparatus

including a probe or a method of use of an NMR apparatus probe in a static magnetic field. Since these possible alternatives would result in different scopes of protection, the wording of claim 1 is not acceptable.

2.1.2 Moreover, the claimed NMR apparatus probe comprises a solenoid coil and a pair of saddle type coils. It is not clear which technical constraints on these elements of the probe are implied by the mention of features like *"the sample"* or *"resonance frequency"* that are related to the outside of the probe, rather than to the probe itself. Thus, also in this respect the Board agrees with the examining division.

2.1.3 Therefore, Article 84 EPC 1973 is not fulfilled and, for this reason, the main request is not allowable.

3. *Auxiliary Request*

3.1 *Article 123(2) EPC*

The amended features in the claim set of the auxiliary request introduce subject-matter that was not originally disclosed.

3.1.1 The basis provided by the appellant for the added feature *"in a nuclear magnetic resonance apparatus for analyzing organic substances"* is page 1, lines 5 to 8 of the application as originally filed. This passage, however, describes in very general terms that *"Analysis methods for organic substances employing nuclear magnetic resonance have been making a rapid progress these days"*, without any particular reference to the

embodiments of the present application. In lines 11 to 16 on page 1, the aim of the invention is described as *"The present invention is concerned with a nuclear magnetic resonance apparatus used for analyzing the structure and interaction on an atomic level of protein molecules in an aqueous solution, in which a trace amount of protein is dissolved."* Hence, a general application of the present invention for any *"organic substances"*, in an aqueous solution or not, is not disclosed and, therefore, the amendment infringes Article 123(2) EPC.

3.1.2 According to the Appellant the further added feature *"the strength of the RF magnetic field is one order of magnitude greater than that of a medical MRI computerized tomography scanner"* was disclosed on page 1, line 19 to page 2, line 1 of the application as originally filed. This passage, however, reads *"More specifically, the performance required includes an order of magnitude greater in terms of magnetic field strength,..."*, without specifying which magnetic field is meant. Hence, a clear and unambiguous disclosure for the strength of the RF magnetic field is missing.

3.1.3 Further, there is no basis for the added feature *"the solenoid coil (302) and the saddle type coils (303a, 303b) are made of a conductor wire having a relative permeability close to 1."*

The passage (page 14, line 19 to page 16, line 2) of the originally filed application cited by the appellant in this regard only refers to a *"good electric conductor, such as copper"*, or preferably *"a special alloy, for example an alloy with copper or aluminum*

having a small relative permeability used as a base material thereof". That any conductor wire having a relative permeability close to 1 is used, is not disclosed in this passage.

3.1.4 Therefore, Article 123(2) EPC is not fulfilled and, for this reason, the auxiliary request is not allowable.

4. The reasons for the decision mentioned above are all mentioned in the Board's communication of 13 June 2013. The appellant, however, failed to make any submissions in reply. The Board has no reason to take another view.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

R. Schumacher G. Assi