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**Datasheet for the decision
of 4 December 2013**

Case Number: T 2409/09 - 3.4.01

Application Number: 02755774.3

Publication Number: 1489683

IPC: H01Q 7/00, H01Q 7/08,
H01Q 21/24

Language of the proceedings: EN

Title of invention:
ANTENNA COIL

Applicant:
DENSO CORPORATION

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC R. 137(3), 103(1)(a)

Relevant legal provisions (EPC 1973):
EPC Art. 83

Keyword:
"Substantial procedural violation (no)"
"Reimbursement of the appeal fee and remittal (no)"
"Sufficiency of disclosure (no)"

Decisions cited:
G 0007/93

Catchword:
-



Case Number: T 2409/09 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 4 December 2013

Appellant: DENSO CORPORATION
(Applicant) 1-1, Showa-cho
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Representative: HOFFMANN EITLE
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 17 July 2009
refusing European patent application
No. 02755774.3 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: G. Assi
Members: H. Wolfrum
M. Vogel

Summary of Facts and Submissions

- I. European patent application 02 755 774.3 (publication No. EP 1 489 683) was refused by a decision of the examining division dispatched on 17 July 2009 for the reasons of lack of novelty and/or inventive step (Articles 52(1), 54(1) and (2) and 56 EPC 1973) of the subject-matter of the claims of the requests that had then been admitted into the proceedings.
- II. The applicant lodged an appeal against the decision on 28 August 2009. The prescribed appeal fee was paid on the same day. A statement setting out the grounds of appeal was filed on 25 November 2009.

The appellant based its appeal on sets of claims according to a main request and five auxiliary requests, all filed with the statement setting out the grounds of appeal. Moreover, the appellant requested reimbursement of the appeal fee and remittal of the case to the department of first instance, due to an alleged substantial procedural violation on the part of the examining division.

Furthermore, an auxiliary request for oral proceedings was made.

- III. On 26 April 2013 the appellant was summoned to oral proceedings.

In an annex accompanying the summons pursuant to Article 15(1) RPBA the Board explained why it did not consider the examination proceedings to suffer from a substantial procedural deficiency. Moreover, the Board

addressed *inter alia* the issue of sufficiency of disclosure (Article 83 EPC).

- IV. In response to the Board's observations, the appellant filed by letter of 30 October 2013 new sets of claims according to a main request and six auxiliary requests, replacing the former requests.
- V. In the oral proceedings, which took place on 4 December 2013, the appellant reiterated the requests which had been made in writing with the grounds of appeal. The Board admitted these requests into the proceedings (Article 13(1) RPBA).
- VI. Independent claim 1 of the appellant's **main request** reads as follows:

"1. Antenna coil having a flat bar-shaped base component (20), a first coil (5) wound such that its axis is the Y-axis of the aforementioned base component (20); a second coil (6) wound such that its axis is the X-axis of the aforementioned base component (20); and a third coil (12) wound such that its axis is the Z-axis of the aforementioned base component (20), and such that there is a groove (22, 23, 24) in at least one part, characterized in that a winding finish side terminal (XF) of the second coil (6), a winding start side terminal (YS) of the first coil (5), and a winding start side terminal (ZS) of the third coil (12) are connectable to a common terminal (COM), wherein the common terminal (COM) is grounded, and a winding start side terminal (XS) of the second coil (6), a winding finish side terminal (YF) of the first

coil (5), and a winding finish side terminal (ZF) of the third coil (12) are connectable, respectively, to individual terminals."

Claims 2 to 5 are dependent claims.

Claim 1 of the **first auxiliary request** differs from claim 1 of the main request in that it is directed to "a *receiving circuit comprising an antenna coil*" which has all the features of claim 1 of the main request with the proviso that, instead of being "connectable", the various coil terminals are respectively "connected" and the further feature that "the receiving circuit further comprises a common terminal (COM) and individual terminals".

Claims 2 to 5 are dependent claims.

Claim 1 of the **second auxiliary request** complements claim 1 of the first auxiliary request by the following further features :

"... further characterized in that the aforementioned base component (20) has a flat, approximately right-angled parallelepiped shape;

tabs (21) are provided on the eight corners of the base component (20) of the aforementioned right-angled parallelepiped shape;

the first wall of the aforementioned tabs (21) is oriented to become the lateral wall of the first groove (23) whereon the aforementioned first coil (5) is wound;

the second wall of the aforementioned tabs (21) is oriented to become the lateral wall of the second groove (22) whereon the aforementioned second coil (6) is wound;

the third wall of the aforementioned tabs (21) is

oriented to become the lateral wall of the third groove (24) whereon the aforementioned third coil (12) is wound, further characterized in that the aforementioned flat-shaped tabs (21) have a quarter-circle fan-shaped configuration."

Claims 2 and 3 are dependent claims.

Claim 1 of the **third auxiliary request** adds at the end of claim 1 of the second auxiliary request the feature "*in which the base is a ferrite base*".

Claim 2 is a dependent claim.

Claim 1 of the **fourth auxiliary request** is based on claim 1 of the second auxiliary request in which the feature "*further characterized in that the aforementioned flat-shaped tabs (21) have a quarter-circle fan-shaped configuration*" is replaced by the group of features :

"...in which the second groove (22) is the deepest, one of the three grooves (22, 23, 24); the second coil (6) is wound in the deepest groove (22); the first coil (5) is wound in the first groove (23) over the second coil (6)."

Claims 2 and 3 are dependent claims.

In claim 1 of the **fifth auxiliary request** the last mentioned group of features is added to the end of the wording of claim 1 of the second auxiliary request.

Claim 2 is a dependent claim.

The sole claim of the **sixth auxiliary request** reads:

"1. A receiving circuit comprising an antenna coil, a common terminal (COM) and individual terminals, the antenna coil comprising a ferrite base (20) shaped in an approximately right-angled parallelepiped configuration having eight corners, wherein:

tabs (21) are provided on the eight corners of the ferrite base (20), the tabs (21) being arranged in four matching pairs, the tabs (21) of each pair being arranged such that flat parts thereof mutually face each other;

a first groove (23) is formed in a first surface of the ferrite base (20) parallel to an Y-axis, a first side portion (21a) of the tabs (21) constituting a lateral wall of the first groove (23);

a second groove (22) is formed in a second surface of the ferrite base (20) parallel to an X-axis, a second side portion (21b) of the tabs (21) constituting a lateral wall of the second groove (22);

the bases of the two tabs (21) of each pair create a third groove (24);

the second groove (22) is the deepest one of the three grooves (22, 23, 24);

a first coil (5) is wound in the second, deepest groove (22);

a second coil (6) is wound in the first groove (23) over the first coil (5);

a third coil (12) is wound in the third groove (24) on the outer circumference of the ferrite base (20);

the coil axes of the first coil (5), the second coil (6), and the third coil (12) cross each other at right angles; and

one (YS, XF, ZS) of the two ends of each coil (5, 6, 12) is connected to the common terminal (COM), whereas the

respective second ends (YF, XS, ZF) of the coils (5, 6, 12) are connected to the individual terminals, thereby providing four terminals, in which the winding finish side terminal (XF) of the second coil (6), the winding start side terminal (YS) of the first coil (5) , and the winding start side terminal (ZS) of the third coil (12) are connectable to the common terminal (COM), wherein the common terminal is grounded."

VII. The appellant's arguments, as far as relevant for the present decision, may be summarized as follows:

By not admitting two auxiliary requests into the proceedings which had been filed within the time limit set in accordance with Rule 116 EPC, the examining division did not properly exercise its discretion under Rule 137(3) EPC, the purpose of which was to bring the proceedings to a close in as few actions as possible. Dealing with the not-admitted requests would have prolonged the proceedings, which had already lasted for four and a half years, by at most a few hours. Thus the examining division made a substantial procedural violation that merited reimbursement of the appeal fee under Rule 103 EPC and remittal to the department of the first instance.

Having regard to the requirement of Article 83 EPC, a presumption of sufficiency of disclosure should prevail, unless there was strong evidence to the contrary. In the present case, there was no such evidence, in particular given the fact that the claimed "FSS" configuration for the connection of winding terminals of the antenna coils to common ground produced a measurable technical effect, as was documented by Figure 14 of the application.

Moreover, the requirement of Article 83 EPC was a positive requirement which was met even if only part of the application provided a teaching that could be carried out by a person skilled in the art. Therefore, it was immaterial whether or not configurations other than "FSS" produced a technical effect as well and whether or not the "FSS" configuration constituted the optimum solution or completely achieved the desired effect. In order to meet the requirement of Article 83 EPC it was sufficient that the application documents taught how to obtain an antenna coil with an "FSS" configuration. On page 15, second paragraph of the originally-filed description even concrete details for manufacturing and operating an antenna coil according to the invention and a receiving circuit comprising such a coil were given.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 99 EPC and is, therefore, admissible.
2. Procedural violation and remittal of the case
 - 2.1 In oral proceedings which were held on 18 June 2009 the examining division, in exercising its discretion under Rule 137(3) EPC, did not admit two auxiliary requests (*ie* the then third and fifth auxiliary requests filed by letter of 17 June 2009) into the proceedings because it considered their content not to be convergent with that of the higher ranking requests (point 0 of the reasons of the contested decision).

These requests belonged to a series of requests which had been filed on 15 May 2009 in accordance with Rule 116 EPC and had been replaced by further amended versions on 17 June 2009.

- 2.2 According to Rule 137(3) EPC an examining division has a discretion whether or not to allow amendment of an application at an advanced stage of the examination procedure. In the exercise of this discretion "*an Examining Division is required to consider all relevant factors which arise in a case. In particular, it must consider both the applicant's interest in obtaining a patent which is legally valid in all of the designated States, and the EPO's interest in bringing the examination procedure to a close by the issue of a decision to grant the patent, and must balance these interests against one another.*" (decision G 7/93 (OJ 1994, 775), paragraph 2.5 of the Reasons).

As regards the role of a board of appeal in reviewing the exercise of discretion by an examining division, paragraph 2.6 of the Reasons in decision G 7/93 states: "*... if an Examining Division has exercised its discretion under Rule 86(3) EPC [1973] [Rule 137(3) EPC] against an applicant in a particular case and the applicant files an appeal against the way in which such discretion was exercised, it is not the function of a Board of Appeal to review all the facts and circumstances of the case as if it were in the place of the first instance department, in order to decide whether or not it would have exercised such discretion in the same way as the first instance department. If a first instance department is required under the EPC to exercise its discretion in certain circumstances, such a department*

should have a certain degree of freedom when exercising that discretion, without interference from the Boards of Appeal. . . ., a Board of Appeal should only overrule the way in which a first instance department has exercised its discretion if it comes to the conclusion either that the first instance department in its decision has not exercised its discretion in accordance with the right principles as set out in paragraph 2.5 above, or that it has exercised its discretion in an unreasonable way, and has thus exceeded the proper limits of its discretion."

2.3 In the present case, the Board sees no evidence for an unlawful exercise of discretion on the part of the examining division. The appellant's assertion that the not-admitted requests had been filed "*within the time limit set in accordance with Rule 116 EPC*" (page 3, lines 6 to 8 of the statement setting out the grounds of appeal) is incorrect because these requests were filed on 17 June 2009, *ie* one day before the oral proceedings before the examining division. In fact, before filing the requests of 17 June 2009, the applicant had already amended its claims three times. For this reason, whether or not and under which circumstances in examination proceedings the criterion of convergence would constitute an applicable principle may be left open. In this regard, at most an error of judgement rather than a substantial procedural deficiency may have occurred.

2.4 With regard to the request for remittal of the case to the examining division, according to Article 11 RPBA, a board shall remit the case "*if fundamental deficiencies are apparent in the first instance proceedings, unless special reasons present themselves for doing otherwise*".

In the present case, as argued above, no fundamental deficiency is apparent so that the remittal of the case is not justified.

Assuming, *arguendo*, that such a deficiency would exist, the remittal of the case would still not be appropriate for the following reason:

As far as the subject-matter of the requests that were not admitted is concerned, the examining division's finding of lack of inventive step of claim 1 of the fourth auxiliary request (comprising more details than claim 1 of the third auxiliary request) would have factually encompassed a corresponding finding with regard to the third auxiliary request and in essence also to the fifth auxiliary request.

2.5 For the above reasons, the appellant's requests for reimbursement of the appeal fee and remittal of the case to the examining division are refused.

3. Sufficiency of disclosure (Article 83 EPC 1973)

3.1 Claim 1 of each of the requests on file requires a certain selection of those of the terminals of the antenna coil which are to be connected to a common (ground) terminal, notably the "*winding finish side terminal (XF) of the second coil (6)*", the "*winding start side terminal (YS) of the first coil (5)*", and the "*winding start side terminal (ZS) of the third coil (12)*". Such a configuration can be dubbed "*FSS*".

As is intended to be shown by Figures 14 and 15 and the corresponding passage of the description (page 14, last paragraph and page 15 of the description as originally

filed), this configuration "FSS" is allegedly the only one which avoids interference between the coils and shows good reception as well as stable frequency properties. Reference is made in this context to the sentence bridging pages 14 and 15, which states: "... FSS (the example wherein terminal (XF), terminal (YS) and terminal (ZS) are selected) is the most suitable" and to the last sentence on page 15, which states: "Except for FSS, examples of common connections other than FFS [sic!] (it can only be guessed that "FSS" is meant here) are approximately analogous to FFS, meaning it is difficult to obtain balanced properties in the three axial directions and inappropriate frequency properties are generated."

- 3.2 Though, each of the three orthogonal coils of the antenna coil with which the measurements shown in Figures 14 and 15 of the application were made is wound in a respective groove of a base that has the shape of a right-angled parallelepiped (see notably Figures 7 to 9).

Such coils are inherently symmetric with respect to their main axis. In other words, they look the same when viewed from either end and there is *a priori* no distinction between the "winding start side terminal" and the "winding end side terminal" of a coil. This symmetry is perfect in particular for single-layered coils of the aforementioned shape. Therefore, according to the laws of physics, mirrored configurations (implying a mirrored configuration of terminal connections) will possess identical electromagnetic properties, *ie* in the present case the configuration "SFF" of terminals connected to common ground must have the same properties and effects as the claimed configuration "FSS".

However, this is not supported by measurement, as is shown by Figure 14 for the configuration "FSS" and in Figure 15 for the configuration "FFS" and any configuration other than "FFS", as stated in the cited sentence from page 15 of the description.

The only logical conclusion which has to be drawn from this observation is that it is not the "FSS" configuration as such, but other or at least further measures which must be responsible for obtaining the desired effect.

- 3.3 Since the application documents do not provide any information as to the nature of such measures, not only do the claims of the requests on file lack essential features (which would be a deficiency under Article 84 EPC 1973) but the application as a whole does not provide sufficient technical information that would enable the skilled person to successfully carry out the invention, contrary to the requirement of Article 83 EPC 1973.
- 3.4 The appellant's submission that the measured and disclosed technical effect for an antenna coil having the terminal configuration "FSS" was proof that the application provided an enabling disclosure misses the point. For a technical teaching to be enabling it is not sufficient to demonstrate the presence of a technical effect; instead the technical means by which this effect can be reliably obtained have to be disclosed. In the present case, the laws of physics associated with the inherent symmetry of the first to third coils preclude the possibility that the configuration "FSS" is the decisive parameter responsible for the observed effect.

Instead, presuming the effect illustrated in Figures 14 and 15 of the application is in fact genuine, the configuration "FSS" is a prerequisite rather than the cause for this effect to occur. However, the true causes and the associated measures to be taken to achieve this effect, which, it is emphasised, does not occur when an "SFF" configuration is employed, remain obscure from the application documents. Therefore, the appellant's further argument that the application, which concentrates on the configuration "FSS", need not disclose other parameters which would be necessary for achieving optimal interference suppression and quality of reception, does not answer the reasons for insufficiency of disclosure either. For the same reason it is immaterial that the application documents provide information as to the structure and operation of the antenna coil. Finally it is noted that the information provided by the cited sentence from page 15 of the description, according to which out of eight possible configurations for three coil terminals to be connected to common ground (see page 14, second and third paragraph of the description) only the configuration "FSS" showed the effect illustrated in Figure 14, cannot simply be disregarded when assessing the teaching provided by the application. Otherwise the reliability of the measurements leading to Figure 14 could be questioned as well.

4. Consequently, the application does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a skilled person and thus does not comply with the requirement of Article 83 EPC 1973.

Order

For these reasons it is decided:

The appeal is dismissed.

The Registrar

The Chairman

R. Schumacher

G. Assi