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**Datasheet for the decision  
of 30 August 2017**

**Case Number:** T 0359/12 - 3.4.01

**Application Number:** 01970540.9

**Publication Number:** 1309879

**IPC:** G01S1/00

**Language of the proceedings:** EN

**Title of invention:**

AUTOMOTIVE RADAR SYSTEMS AND TECHNIQUES

**Applicant:**

Valeo Radar Systems, Inc.

**Headword:**

**Relevant legal provisions:**

EPC 1973 Art. 84  
RPBA Art. 13(1), 12(4)

**Keyword:**

Late-filed request - request clearly allowable (no) - diverging  
versions of claims - request could have been filed in first  
instance proceedings (yes)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
**Chambres de recours**

European Patent Office  
D-80298 MUNICH  
GERMANY  
Tel. +49 (0) 89 2399-0  
Fax +49 (0) 89 2399-4465

Case Number: T 0359/12 - 3.4.01

**D E C I S I O N**  
**of Technical Board of Appeal 3.4.01**  
**of 30 August 2017**

**Appellant:** Valeo Radar Systems, Inc.  
(Applicant) 46 River Road  
Hudson, NH 03051 (US)

**Representative:** Jauregui Urbahn, Kristian  
Valeo Schalter und Sensoren GmbH  
VIC-E-IP  
Laiernstraße 12  
74321 Bietigheim-Bissingen (DE)

**Decision under appeal:** **Decision of the Examining Division of the European Patent Office posted on 27 October 2011 refusing European patent application No. 01970540.9 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman** G. Assi  
**Members:** T. Zinke  
J. Geschwind

## **Summary of Facts and Submissions**

- I. The examining division refused European patent application No. 01 970 540.

In its decision, the examining division held that the requirements of Art. 123(2) EPC, R. 137(5) EPC, Art. 54 and 56 EPC 1973 were not met for a then pending main request. The examining division further held that a first, a second and a third auxiliary request then pending did not meet Art. 123(2), R. 137(5) EPC, Art. 84 EPC 1973 and Art. 56 EPC 1973. In addition, objections were raised under Art. 83 EPC 1973 against the second and the third auxiliary request then pending.

- II. The appellant (applicant) filed an appeal against the decision.

With the grounds of appeal, the appellant requested that the decision be set aside and that a patent be granted on the basis of enclosed sets of claims according to a main request or an auxiliary request, respectively.

- III. At the appellant's request, a summons to attend oral proceedings was issued.

In a communication pursuant to Art. 15(1) RPBA, the appellant was informed of preliminary objections under Art. 123(2) EPC, Art. 84 EPC 1973 and Art. 56 EPC 1973.

- IV. In reply, the appellant filed amended claim sets for a new main request, a new auxiliary request 1 and a new auxiliary request 2, respectively, provided a basis for

the amendments made and argued with respect to the preliminary objections of the Board.

V. At the oral proceedings, the Board admitted the new main request and the new auxiliary requests 1 and 2 into the proceedings under Art. 13(1) RPBA and raised objections under Art. 84 EPC 1973 against independent claims 1 of all new requests. In response, the appellant withdrew these requests and filed revised claim sets for a pending main request and a pending auxiliary request, respectively.

VI. Claim 1 of the appellant's pending main request reads:

*"1. A method for detecting an object in a side blind spot of an automobile with a radar system comprising: transmitting a transmit signal (50); receiving a receive signal (54) generated by at least a portion of the transmit signal impinging on the object; calculating a difference signal in response to the transmit signal and the receive signal; performing an FFT on the difference signal to provide an FFT output signal; computing a derivative of the FFT output signal; detecting the object in response to a zero crossing of the derivative of the FFT output signal; detecting a range of the object as a function of a frequency associated with the zero crossing of the derivative of the FFT output signal; establishing a range boundary; discarding an object detection if the range of the object is outside of the range boundary; the range boundary being defined by way of pre-established range thresholds for each azimuthal beam from multiple beams used for detection defining a detection zone;*

*a maximum detection zone boundary in azimuth having a trapezoidal of substantially rectangular shape."*

Independent claim 9 is a correspondingly formulated claim for a radar system. Claims 2 to 8 and 10 to 13 are dependent claims.

VII. Claim 1 according to the pending auxiliary request differs from claim 1 according to the pending main request in that it replaces the last feature

*"a maximum detection zone boundary in azimuth having a trapezoidal of substantially rectangular shape"*

with a different feature

*"wherein a specified azimuthal maximum detection zone boundary shape and size can be obtained by altering the range thresholds for the multiple beams".*

A corresponding amendment was made to independent claim 9.

## **Reasons for the Decision**

1. Applicable law

It is noted that the revised version of the Convention (EPC 2000) does not apply to European patent applications pending at the time of its entry into force (13 December 2007), unless otherwise provided. In the present decision, where Articles or Rules of the former version of the EPC apply, their citation is followed by the indication "1973".

2. The appeal is admissible.

3. Admissibility of the pending main request

3.1 The amended claims of the pending main request were filed in response to objections raised by the Board during oral proceedings against the claims then on file.

3.2 Under Art. 13(1) RPBA, any amendment to a party's case after it has filed its grounds of appeal may be admitted at the Board's discretion.

In accordance with established jurisprudence of the boards of appeal (cf. Case Law of the Boards of Appeal of the European Patent Office, 8th edition, July 2016, section IV.E.4.4, *"Criteria for consideration of amended claims"*, pages 1151-1160), *"As a rule, the board's decisions should be based on the issues in dispute at first instance, which does not rule out the admission of new submissions, but does subject it to the fulfillment of certain criteria, given that no entirely "fresh case" should be created on appeal ... . Thus, in addition to the factors referred to in Art. 13(1) RPBA, the following criteria may ... likewise be decisive: there must be sound reasons for filing a request at a late stage in the proceedings, as may be the case where amendments are occasioned by developments during the proceedings or where the request addresses still outstanding objections. The amendments must be prima facie clearly allowable ..."*, i.e. it must be immediately apparent to the board that the amendments made successfully address the issues raised, without giving rise to new ones.

3.3 During the foregoing discussion during oral proceedings about the requests filed with the reply to the Board's

communication under Art. 15(1) RPBA, the Board raised objections under Art. 84 EPC 1973 with regard to two features of the independent claims then pending.

- 3.3.1 The first clarity objection concerned the definition of the detection zone that could be interpreted as meaning that said detection zone is three-dimensional. Since it was further stated in the independent claims that the maximum detection zone boundary has a *"trapezoidal or substantially rectangular shape"*, i.e. a two-dimensional shape, a contradiction in terms arises.
- 3.3.2 The second clarity objection was made with regard to the feature *"having a trapezoidal or substantially rectangular shape"* considered per se.

According to Art. 84 EPC 1973 *"The claims shall define the matter for which protection is sought. They shall be clear and concise and be supported by the description."*

The terms *"trapezoidal"* and *"rectangular"* have a well-known established meaning, i.e. *"trapezoidal"* defines a quadrilateral having only two sides parallel and *"rectangular"* describes a polygon with four sides and four right angles, thus implying that the respective sides facing each other are parallel. However, the use of *"substantially"* in relation to a rectangular shape as well as the embodiments depicted in Figures 11A, 11B, 17A and 17B make the meaning of these terms and, consequently, the definition of the scope of protection unclear.

In Figures 11A, 11B, 17A and 17B, each radar beam is represented by an azimuthal cross section through a respective radar cone. A plurality of such cross



sections, each having a given detection range, would cover a continuous azimuthal area. It is evident from the figures, however, that this continuous area (in the wording of the patent application: "*actual maximum detection zone boundary 538*", cf. page 31, line 10; "*actual maximum detection zone 550*", cf. page 31, line 23) is neither trapezoidal nor substantially rectangular, but rather has an irregular perimeter consisting of a plurality of arcs and relatively straight lines.

In these figures additional lines with reference signs 536 and 548 are drafted and labelled "*side detection zone*" (cf. page 31, lines 4 to 5), "*maximum detection zone boundary*" (cf. page 31, line 5) or "*specified maximum detection zone boundary*" (cf. page 31, lines 10 to 11). Although these additional lines could be considered to resemble a trapezoidal or substantially rectangular shape, they are de facto irregular areas.

Hence, a person skilled in the art would understand that the provision of different ranges for the beams aims at achieving an azimuthal cross section of the detection zone that may at most look like a trapezoid or a rectangle.

However, the concept of "*similarity*" is undefined. As correctly pointed out by the examining division in the decision under appeal (cf. section 2.2.2), "*it is up to the taste and fantasy of the observer to read a geometrical form into the boundary*". Thus, the resulting shapes shown in Figures 11A, 11B, 17A and 17B result from an arbitrary approximation of an irregular perimeter, different approximations leading to different resulting shapes. For instance, the actual

areas 538 and 550 in Figures 11A, 11B, 17A and 17B might also be approximated by a semi-circle.

In the statement setting out the grounds of appeal (cf. section 2.3, pages 3 to 4) the appellant, with regard to the meaning of *"trapezoidal or substantially rectangular"*, submitted that *"the total detection zone is obtained by combining all those pieces of segment of arcs finally covering approximately a geometrical shape like a trapezoid or rectangle"* (emphasis added by the Board). With regard to the question whether the claimed wording is sufficiently defined, the appellant only stated *"The presently chosen wording is a good compromise between clarity and concision, the description supporting well such wording."* This statement is, however, deficient considering that the scope of protection cannot be defined by relying on the *"taste and fantasy of an observer"*. Since the person skilled in the art cannot conclude in an objective way whether a particular *"actual"* detection zone boundary qualifies as being *"trapezoidal or substantially rectangular"*, the scope of protection is not well-defined contrary to the requirements of Art. 84 EPC 1973.

- 3.4 With the pending main request, the appellant incorporated the wording *"in azimuth"* for the maximum detection zone boundary and *"azimuthal"* for the beams, but left the wording *"having a trapezoidal or substantially rectangular shape"* unchanged in the independent claims. Whereas the first objection mentioned above is met by the amendment, the second objection still applies.
- 3.5 Consequently, the pending main request was not admitted into the appeal proceedings.

4. Admissibility of the pending auxiliary request
  - 4.1 As compared to the pending main request, the appellant removed the feature "*a maximum detection zone boundary having a trapezoidal or substantially rectangular shape*" from the independent claims, which feature has been considered as lacking clarity (cf. above). Hence, the removal of this feature could be considered as a sound reason for filing amended claims.
  - 4.2 Apart from said deletion, the appellant added the new feature "*wherein a specified azimuthal maximum detection zone boundary shape and size can be obtained by altering the range thresholds for the multiple beams*", as taken from the description (cf., for instance, page 32, lines 24 to 25).
  - 4.3 This amendment, however, leads to a shift from a particular shape of the maximum azimuthal detection zone boundary (i.e. "*trapezoidal or substantially rectangular*"), which had been considered throughout the whole appeal proceedings, to a general adjustment possibility of size and shape of the azimuthal maximum detection zone boundary. Since this wording covers various different shapes, for instance circles, polygons or other irregular shapes, the subject-matter of the claims is diverging with regard to the claims submitted during appeal proceedings.
  - 4.4 Hence, by admitting the pending auxiliary request into the appeal proceedings, a "*fresh case*" would result. Such a major shift in the claimed subject-matter should not be allowed in a late stage of the appeal proceedings. An admission of these claims would indeed

result in a new case requiring a complete novel examination.

- 4.5 During oral proceedings the appellant argued that the claims of the pending auxiliary request were not diverging with regard to the claims earlier submitted, since the person skilled in the art would understand from the description that indeed any possible shape of the maximum azimuthal detection zone boundary was envisaged as long as it covered the blind spot of a vehicle. Moreover, "*trapezoidal or substantially rectangular*" was only a different way of claiming the same aspect.

This argumentation is not convincing. In the application it is mentioned to change the "*detection zone*" based on "*car size and peripheral vision preferences*" or for "*towing a trailer, lane size change, traffic density and personal preference*" (cf. page 44, lines 1 to 4). The cited passages provide the person skilled in the art with the information that shapes other than "*trapezoidal or substantially rectangular*" could be envisaged so as to achieve an optimal adaptation to any blind spot. Hence, the application provides no basis for the assumption that both formulations are equivalent in that they claim the same aspect.

- 4.6 A further aspect to be considered is that according to Art. 12(4) RPBA a board has the power to hold inadmissible facts, evidence or requests which could have been presented in the first instance proceedings.

In the present case, the examining division already raised clarity objections under Art. 84 EPC 1973 against the formulation "*having a trapezoidal or*

*substantially rectangular shape*" during oral proceedings on 11 October 2011 (cf. minutes, page 5, second paragraph) and discussed them in more detail in the decision under appeal (cf. reasons, section 2.2.2). Hence, the appellant had already been confronted with this objection during first instance proceedings. In view of this, the appellant could have submitted amended claims corresponding to the pending auxiliary request during oral proceedings before the examining division at the latest. As it results from the minutes (cf. page 5, third paragraph), the appellant, however, waived his right to comment or to file further requests to overcome said objection.

- 4.7 Since the subject-matter of the pending auxiliary request diverges from the subject-matter of the pending main request submitted during oral proceedings and, moreover, the amendments made could have been produced in first instance proceedings, the pending auxiliary request was not admitted into the appeal proceedings under Art. 12(4) and 13(1) RPBA.

5. Since the pending main request and auxiliary request were not admitted into the proceedings and all previous requests had been withdrawn, there are no requests on file, so that the appeal has to be dismissed.

## Order

### For these reasons it is decided that:

1. The appeal is dismissed.

The Registrar:

The Chairman:



M. Schalow

G. Assi

Decision electronically authenticated