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**Datasheet for the decision  
of 6 November 2018**

**Case Number:** T 0634/13 - 3.4.01

**Application Number:** 07867331.6

**Publication Number:** 2084555

**IPC:** G01S13/93, G01S13/58,  
G01S13/34, G01S13/44

**Language of the proceedings:** EN

**Title of invention:**

SYSTEM AND METHOD FOR GENERATING AN ALERT SIGNAL IN A DETECTION  
SYSTEM

**Applicant:**

Valeo Raytheon Systems, Inc.

**Headword:**

Alert Signal / VALEO RYTHEON SYSTEMS

**Relevant legal provisions:**

EPC Art. 123(2)

**Keyword:**

Amendments - added subject-matter (yes)



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

Boards of Appeal of the  
European Patent Office  
Richard-Reitzner-Allee 8  
85540 Haar  
GERMANY  
Tel. +49 (0)89 2399-0  
Fax +49 (0)89 2399-4465

Case Number: T 0634/13 - 3.4.01

**D E C I S I O N**  
**of Technical Board of Appeal 3.4.01**  
**of 6 November 2018**

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

**Representative:** Croonenbroek, Thomas Jakob  
Innovincia  
11, avenue des Tilleuls  
74200 Thonon-les-Bains (FR)

**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 5 November 2012  
refusing European patent application No.  
07867331.6 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman** P. Scriven  
**Members:** P. Fontenay  
J. Geschwind

## **Summary of Facts and Submissions**

- I. This decision is on the appeal filed by the appellant (applicant) against the Examining Division's decision to refuse European patent application No. 07 867 331.
- II. The application was refused because it did not meet the requirements of Article 52(1) EPC as to novelty.
- III. The appellant requested that the decision of the first instance be set aside and that a patent be granted on the basis of a first set of claims 1 to 11 according to a main request submitted with the statement setting out the grounds of appeal. As an alternative, grant of a patent on the basis of a set of claims 1 to 10 according to an auxiliary request, annexed to the statement of grounds, was requested.
- IV. The appellant did not amend its requests in the course of the appeal proceedings.
- V. In the statement of grounds, the appellant provided detailed indications regarding support in the original application for the features of the amended claims according to the main and auxiliary requests. Arguments with regard to novelty and inventive step were also put forward.

VI. Oral proceedings before the Board took place on 6 November 2018. As had been previously announced by letter, the appellant was not represented at them.

VII. Claim 1 of the main request reads:

*A method of generating alert signals in a detection system (SOD), comprising:*

- providing multiple receive beams (22 a-g) with different overlapping fields of view within an associated detection zone (24; 25);
- receiving reflected signals in one or more of the receive beams (22 a-g),
- determine a receive beam sequence,
- *comparing through correlation the determined receive beam sequence with particular receive beam sequences of stored scenarios including scenarios from the group consisting of a pass-from-the-rear scenario, a stagnation scenario, a side-merge scenario, a corridor scenario and a convoy scenario to determine whether to generate an alert signal.*

VIII. Independent claim 4 of the main request is directed to an automotive radar system. It reads:

*An automotive radar system comprising:*

- a transmit system for generating a transmit signal emitted from the automotive radar system via said transmit antenna;
- a receiving system comprising:
- a receive antenna system (160) adapted to

*generate a plurality of receive antenna beams (22 a-g) with different overlapping fields of view within an associated detection zone (24, 25); and*

- a receiver coupled to receive signals from one or more of the one or more receive antenna beams (22 a-g); and*
- a storage device having the one or more scenarios stored therein, the stored scenarios corresponding to at least one of:  
(a) a pass-from-the-rear scenario; (b) a stagnation scenario; (c) a side merge scenario; and (d) a corridor scenario and (e) a convoy scenario, said receiving system being adapted*
- to receive signals through multiple receive antenna beams (22 a-g)*
- to determine a receive beam sequence,- to compare through correlation the receive beam sequence received from receive beams with particular receive beam sequences of said stored scenarios to determine whether to generate an alert signal.*

IX. Claim 1 of the auxiliary request reads:

*A method of generating alert signals in a detection system (SOD), comprising:*

- providing multiple receive beams (22 a-g) for detecting objects, with different overlapping fields of view in an associated detection zone (24; 25);*
- receiving reflected signals in one or more of the receive beams (22 a-g),*
- processing reflected signals to determine*

*data comprising received beam data, range data and range rate data*

*- comparing through correlation the determined data with characteristic receive beam data, range data and range rate data of stored scenarios including scenarios from the group consisting of a pass-from-the-rear scenario, a stagnation scenario, a side-merge scenario, a corridor scenario and a convoy scenario to determine whether to generate an alert signal.*

X. Independent claim 4 of the auxiliary request is directed to an automotive radar system. It reads:

*An automotive radar system comprising:*

*- a transmit system for generating a transmit signal emitted from the automotive radar system via said transmit antenna;*  
*- a receiving system comprising:*  
*- a receive antenna system (160) adapted to generate a plurality of receive antenna beams (22 a-g) with different overlapping fields of view within an associated detection zone (24, 25); and*  
*- a receiver coupled to receive signals from one or more of the one or more receive antenna beams (22 a-g); and*  
*- a storage device having the one or more scenarios stored therein, the stored scenarios corresponding to at least one of:*  
*(a) a pass-from-the-rear scenario; (b) a stagnation scenario; (c) a side merge scenario; and (d) a corridor scenario and (e) a convoy scenario, said receiving system*

*being adapted*

- *to receive signals through multiple receive antenna beams (22 a-g)*
- *to process reflected signals to determine data comprising received beam data, range data and range rate data*
- *to compare through correlation the determined data with characteristic receive beam data, range data and range rate data of said stored scenarios to determine whether to generate an alert signal.*

## **Reasons for the Decision**

*Added subject-matter*

### **1. Main request**

- 1.1 The step in claim 1 of the main request in which "*a received beam sequence is determined*" does not result directly and unambiguously from the original disclosure. As a consequence, the ensuing step of "*comparing [...] the determined receive beam sequence with particular received beam sequences of stored scenarios*" also lacks a basis in the original application documents.
- 1.2 The appellant cites the original description at page 19, lines 9-19; page 23, lines 6, 16, 26; and page 24, lines 4, 18 and 19-22; but these passages are not conclusive.

- 1.3 The passage on page 19 merely refers to examples of parameters that may be obtained based on the received beams, without elaborating on how the beam sequences actually required depend on the parameter to be determined. Although it refers to the scenarios of figures 9A-9E, that is, to the scenarios to be identified before generating an alert signal, it does not indicate that the method of the invention comprises a step in which the beam sequence is determined.
- 1.4 Nor are figures 10A to 10C sufficient to support the introduction of this step. As specified at page 3, lines 6-10, of the published application, these figures are illustrative of range-versus-time graphs for selected scenarios. These graphs thus illustrate which ranges would be "seen" by means of the various received beams, over time, for various situations likely to occur. The statement at page 23, line 6, that the "U-shaped curve 1002 is formed in a particular receive beam sequence" is thus not conclusive. The same applies to the corresponding statements at page 23, lines 16 and 26. It is worth noting, in this context, that the statement at page 23, lines 1 and 2, that "*The scenarios described in FIGS. 9A-9E may be further characterized by using range-versus-time graphs*" does not necessarily imply that the system according to the invention proceeds by generating the corresponding graphs. The purpose of Figures 10A to 10C is primarily to contribute to a better understanding of the various scenarios considered, by indicating which range would be perceived by which reflected beam and when this is to occur. The figures do not provide evidence that the radar system is indeed controlled so as to generate the corresponding receive beam sequences.



- 1.5 It is even doubtful that the system indeed proceeds on the basis of the characteristics illustrated in Figure 10A to 10D, since that would imply that an alert signal would only be generated following completion of a stored scenario, that is, at a time subsequent to the occurrence of the potentially hazardous condition. The recited step of determining a receive beam sequence would have to be construed as referring to a restricted number of received beams so as to provide a limited front portion of the range-versus-time graphs of Figures 10A to 10C. Nothing in the description suggests that this is the case.
- 1.6 The determination of receive beam sequences, as recited in claim 1, is not straightforward since it requires knowledge of various parameters. In particular, the period for which such a sequence is to be determined, the starting point (event) and the order of the beams to be considered in order to permit the correlation to be carried out, should be specified beforehand. In the Board's view, the fact that the application does not elaborate on this aspect indicates that the skilled person would not understand it to be part of the invention.
- 1.7 The Board, therefore, does not find any indication, in the original application, that the method according to the invention comprises a step of determining a beam sequence.
- 1.8 Similarly, the Board can find no basis for "*receiving system being adapted [...] to determine a receive beam sequence*" in claim 4.

2. *Main and Auxiliary requests*

2.1 Claim 1 of the main request comprises the step of "*comparing through correlation the determined receive beam sequence with particular receive beam sequences of stored scenarios...*". Independent claim 4 of the main request includes the corresponding functional limitation for the receiving system.

2.2 Claim 1 of the auxiliary request comprises the step of "*comparing through correlation the determined data with characteristic receive beam data, range data and range rate data of stored scenarios...*". A similar functional limitation is present in independent claim 4 of the auxiliary request as to the system.

2.3 The term *correlation* has a well-established meaning as an operation between mathematical functions that provides an indication of their similarity. Correlation in this sense is commonly used in the field of signal processing in order to compare signals. In particular, it is used to identify predetermined patterns in a signal. This operation on signals or, by extension, on data representative of such signals, is consistent with the use of the term in claim 1 of the main and auxiliary requests, where the determined receive beam sequence is to be compared with particular receive beam sequences or where data are compared with characteristic beam data, respectively. However, this meaning does not reflect the meaning of the term in the original application.

2.3.1 The step in claim 1 of the main request of comparing, by correlation, the determined receive beam sequence with particular receive beam sequences does not reflect the teaching of the original disclosure. In the context

of the invention, such a comparison would not deliver any useful results, since it would only determine similarities between the actual sequences of beams generated without allowing any conclusion to be drawn as to the reflected signals resulting from the selected beam sequence. Even if it were argued that the skilled person would (implicitly) construe the claim as referring to a comparison of the reflected signals in the one or more receive beams with the corresponding signals to be expected according to the various scenarios to be identified, such an interpretation would not be supported by the original application documents.

2.3.2 The passage at page 24, lines 19-22 of the original application, which the appellant puts forward as basis for the feature in question, does not provide the required support for the amended wording. The teaching conveyed by the cited passage differs from the present interpretation of the claim. It reads: "*Based on the beam detection, the range and the range rate (relative velocity) for the above scenarios, it is possible using statistical analysis and probabilities to correlate the scenarios to actual real-world events to determine when to send alert messages*". The term "to correlate" is used, in this context, as a synonym for the verb "to associate" and not as a mathematical operation, contrary to what claim 1 of both requests now suggests. In essence, the cited passage does not hint at any correlation being calculated between the recited parameters, but rather suggests comparing the various parameters thus obtained by use of statistical analysis and probabilities.

2.3.3 The step in claim 1 of the auxiliary request of "*comparing through correlation the determined data with*

*characteristic receive beam data, range data and range rate data of stored scenarios...*" and the corresponding limitation in claim 4 of the auxiliary request also lack a basis in the original disclosure.

- 2.4 Independently of the issues already set out in relation to the term "correlation", the passage cited by the appellant on page 24, reproduced above in section 2.6, suggests a different process from the one actually claimed. The passage on page 24 is about the possibility of "correlating" scenarios and real-world events, without, however, specifying that this "correlating" is actually a step of the invention. The claim, on the other hand, defines correlation of (beam) data and makes no reference to scenarios or real-world events.
- 2.5 The Board does not see, in the original disclosure, any basis for the step of comparing, by correlation, the determined data with characteristic receive beam data, range data and range rate data, when the term "correlation" bears its usual meaning.
- 2.6 The independent claims 1 and 4 of the main and auxiliary requests define subject-matter extending beyond the content of the original application, contrary to Article 123(2) EPC

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:



R. Schumacher

P. Scriven

Decision electronically authenticated