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Datasheet for the decision of 26 June 2008

Case Number: T 0038/06 - 3.4.01

Application Number: 97909815.9

Publication Number: 0932837

IPC: G01S 13/34

Language of the proceedings: EN

Title of invention:
Procedure for the elimination of interference in a radar unit of the FMCW type

Applicant:
Saab AB

Opponent:
-

Headword:
-

Relevant legal provisions:
-

Relevant legal provisions (EPC 1973):
EPC Art. 83, 123(2), 52(2)(a)
EPC R. 137(4)

Keyword:
"Disclosure - sufficiency - (yes)"

Decisions cited:
T 0708/00

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0038/06 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 26 June 2008

Appellant: Saab AB
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 5 July 2005 refusing European application No. 97909815.9 pursuant to Article 97(1) EPC 1973.**

Composition of the Board:

Chairman: B. Schachenmann
Members: F. Neumann
H. Wolfrum

Summary of Facts and Submissions

I. The appeal lies from the decision of the examining division refusing the European patent application number 97 909 815.9.

II. The appellant requested that the decision be set aside and that a patent be granted on the basis of claim 1 of a main (and sole) request as filed during the oral proceedings of 26 June 2008.

III. Independent claim 1 of the sole request reads as follows:

"A procedure for detecting interferences in the form of pulses and linear chirps in a FMCW radar unit with linear frequency sweep, where transmitted and received signals are combined to form a difference signal, the beat signal, with a wave for each target, where the frequency, amplitude and phase of the wave contain the information about the target,
characterized in that the procedure comprises the steps
(a) subjecting the difference signal to a time-frequency division carried out by Short Time Fourier Transform (STFT), and
(b) detecting the interferences in the transformed signal by a Hough Transform for detecting straight lines in images."

Reasons for the Decision

1. The appeal is admissible.

2. In the light of the entry into force of the EPC 2000, reference is made to Article 7(1), 2nd sentence of the Revision Act of 29 November 2000 ("Act revising the Convention on the Grant of European Patents (European Patent Convention) of 5 October 1973, last revised on 17 December 1991") and the transitional provisions for the amended and new provisions of the EPC (Decision of the Administrative Council of 28 June 2001), from which it may be derived which Articles of the EPC 1973 are still applicable and which Articles of the EPC 2000 shall apply.

3. In view of the amendments made to claim 1 during the oral proceedings of 26 June 2008, the requirements of Article 83 EPC 1973 are now considered to be satisfied.

The Board agrees with the examining division that, at the time of issuing the contested decision, the application did not disclose the invention as claimed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC 1973). However, the amendments made to the independent claim during the course of the appeal proceedings have overcome this objection.

Claim 1 of all previous requests in the appeal proceedings (all of which were withdrawn during the oral proceedings) included the steps of (i) subjecting the difference signal to an Short Time Fourier Transform (STFT), (ii) detecting interference in each of the frequency bands of the STFT, (iii) eliminating the interference in each of the frequency bands of the STFT, (iv) calculating an interference-free time signal from the interference-free frequency bands and (v)

calculating a Discrete Fourier Transform from the interference-free time signal.

The Board was of the opinion that since the skilled person was not provided with a clear and complete disclosure either on how to eliminate the interference in each of the frequency bands of the STFT representation (step (iii)) or on how to calculate an interference-free time signal from the interference-free frequency bands (step (iv)), the requirements of Article 83 EPC were not fulfilled with regard to any request incorporating these steps.

With respect to the elimination step (iii), the representative submitted that the description clearly taught the use of clipping and interpolation. However, the Board did not agree that there was a clearly derivable teaching in the application that clipping and interpolation should be used to eliminate the interference occurring in the STFT. Removal of interference by clipping was only ever disclosed in the application in the context of signals in the time domain. Extrapolation was mentioned on page 7, lines 9 to 13, but the unclear nature of this passage left some doubt as to whether the extrapolation was to be performed on the beat signal (i.e. once the STFT signal had been converted back to the time domain) or on the STFT signal.

With respect to the calculation of an interference-free time signal from the STFT (step (iv) above), the representative insisted that the skilled person would know that the time signal could be obtained by performing an inverse STFT. However, the Board was of

the opinion that, under the specific circumstances of the present case, the use of an inverse STFT would not be so obvious to the skilled person. From page 13, lines 18 to 23 it would appear that interference *elimination* and subsequent *interpolation* are to be seen as two separate steps. Since the additional step of interpolation has not been defined in claim 1, it would appear that the samples containing interference in claim 1 are merely eliminated without the resulting "holes" in the STFT being filled in. The Board was of the opinion that the presence of these "holes" in the STFT could affect the suitability of the implementation of an inverse Fourier Transform and would render the inverse transformation anything but straightforward. The Board thus had serious doubts that the skilled person would intuitively know how to obtain a time signal from the modified STFT signal. Since absolutely no disclosure was provided as to how to perform this step, the invention as set out in claim 1 of the previous requests was not disclosed in a manner sufficiently clear and complete for it to be carried out.

However, claim 1 as filed as the main (and sole) request in the oral proceedings of 26 June 2008 is no longer directed to the complete procedure for providing an interference-free radar signal, but only to a procedure for detecting interferences in the form of pulses or linear chirps comprising the steps of (i) subjecting the difference signal to an STFT and (ii) detecting the interferences in the transformed signal by a Hough Transform. The portions of the claim for which an enabling disclosure was held to be lacking have been removed from the independent claim. The Board

is satisfied that Figure 5 of the application in combination with page 10, lines 6 to 14 discloses the invention now claimed in a manner sufficiently clear and complete for it to be implemented by the skilled person. The objections under Article 83 EPC 1973 have therefore been overcome by claim 1 of the main request.

4. Although the subject-matter now defined in claim 1 of the main (and sole) request is considerably broader than the subject-matter originally claimed, the Board is satisfied that this amendment complies with the requirements of Article 123(2) EPC.

The principle underlying Article 123(2) EPC is that of legal certainty for the public. Third parties should be able to rely on the fact that a patent can only be granted for subject matter which is encompassed by the original disclosure and that no subject matter is introduced which goes beyond this disclosure. However, at the pre-grant stage of proceedings, third parties reading the published application have to take into account that the claims could ultimately be directed to any aspect presented in the original application.

In the present case, the independent claim has been redrafted to cover only that aspect which was considered to meet the requirements of Article 83 EPC 1973, namely the procedure for *detecting* interferences in the form of pulses and linear chirps. This amendment does not extend beyond the content of the application as originally filed: the method of detecting the interferences as currently defined in claim 1 is to be found in the original application documents in claim 1, at page 6, lines 20 to 30, and at page 10, lines 6 to

14. Although the step of detecting the interferences was always disclosed in combination with the additional elimination and calculation steps as forming part of the complete procedure for eliminating interferences, it is clear that the detection can be performed independently of the other steps and effectively constitutes a discrete self-contained process. Since the main teaching of the original disclosure - and indeed the only portion of the application which was sufficiently clear and complete for it to be carried out by a skilled person - was how to identify the interferences, the Board considers that it is justified to isolate this discrete portion of the complete procedure and to make this aspect the subject of a new independent claim.

5. With regard to the requirements of Rule 137(4) EPC, the Board notes that the amended claim may only be refused on the basis of Rule 137(4) EPC if the subject-matter of the claims filed originally and that of the amended claim is such that, had all the claims been filed together, a further search fee would have been payable - on top of the search fee payable in respect of the claims actually filed at the outset - in respect of the amended claims (see T 708/00, OJ EPO 2004, 160, Reasons, point 8). In the present case, the subject-matter of amended claim 1 overlaps entirely with the subject-matter of the originally filed (and searched) claims, amended claim 1 containing features of originally filed claims 1, 2, 5 and 7. Moreover, there is no prior art presently on file which would destroy the novelty of the single general concept linking the original claims and the amended claim or suggest that it is obvious. In the hypothetical situation in which the amended claim 1

were to be filed together with the original claims, no additional search fee would have been requested for the amended claim 1 and so Rule 137(4) EPC is not infringed.

6. A further reason for refusing the application given by the examining division in paragraph 2 of the Reasons was that the claimed method was purely a mathematical method.

The Board cannot accept this objection. Although the procedure for detecting interferences now defined in claim 1 comprises a mathematical treatment of the transmitted and received signals, the claimed subject-matter does not constitute a mathematical method as such. The subject matter of claim 1 is therefore not excluded from patentability under Article 52(2)(a) EPC.

7. The contested decision was based only on the grounds of Article 83 EPC 1973 and Article 52(2)(a) EPC 1973. In view of the amendments made during the appeal procedure remittal of the case to the examining division for further prosecution (Article 111(1) EPC 1973) is appropriate. It is noted that although the requirements of Rule 137(4) EPC are considered to be satisfied, the focus of the claims has nevertheless shifted considerably, the claimed subject matter no longer being limited by the steps (iii), (iv) and (v) referred to above. This means that a further search for relevant prior art in accordance with the Guidelines for Examination C-VI, 8.2 could be required.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the examining division for further prosecution on the basis of the claim filed during the oral proceedings.

The Registrar: The Chairman:

R. Schumacher B. Schachenmann