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**Datasheet for the decision
of 2 November 2011**

Case Number: T 0664/08 - 3.4.01

Application Number: 00985504.0

Publication Number: 1240531

IPC: G01S 1/04, G01S 5/14

Language of the proceedings: EN

Title of invention:
A receiver for a satellite based position location system

Applicant:
Nokia Corporation

Headword:
-

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

Keyword:
"Claims - support by description (no)"

Decisions cited:
-

Catchword:
-



Case Number: T 0664/08 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 2 November 2011

Appellant:
(Applicant)

Nokia Corporation
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Representative:

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Decision under appeal:

**Decision of the Examining Division of the
European Patent Office posted 13 November 2007
refusing European patent application
No. 00985504.0 pursuant to Article 97(1) EPC
1973.**

Composition of the Board:

Chairman: P. Fontenay
Members: F. Neumann
C. Heath

Summary of Facts and Submissions

- I. The appeal lies from the decision of the examining division to refuse the European patent application number 00 985 504.0 for failure to comply with Articles 83, 84, 54, 56 and 123(2) EPC. The decision was dispatched on 13 November 2007.
- II. Notice of appeal was filed on 04 December 2007 and the appeal fee was paid on the same day. A statement setting out the grounds of appeal was filed on 19 March 2008.
- III. The appellant has requested that the decision be set aside and the present application be remitted to the examining division for further prosecution on the basis of claims 1 to 10 filed with the statement setting out the grounds of appeal. Refund of the appeal fee has also been requested.
- IV. After issuing a summons to oral proceedings, the Board issued a communication setting out the points to be discussed during the oral proceedings. In this communication, the Board indicated its preliminary opinion that the subject-matter of claim 1 did not appear to be inventive and set out the corresponding reasoning for this preliminary finding. In addition, the Board expressed its doubts that the invention was disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. The Board also indicated that claim 1 did not appear to be supported by the description in its full breadth. Furthermore, no basis could be found in the original application for the subject-matter of dependent claim 6.

V. The appellant did not respond in substance to this communication, but merely indicated that it did not intend to participate in the oral proceedings.

VI. Claim 1 reads as follows:

"A method for determining synchronisation of a signal received at a global positioning system receiver and transmitted by a global positioning system satellite, wherein said method comprises the steps of transform coding said received signal so as to transform said received signal from time domain to frequency domain coefficients, characterised in that dividing respective ones of said frequency domain coefficients by corresponding ones of frequency domain coefficients of the expected transmitted signal associated with said satellite to provide corresponding transform value ratios, processing said transform value ratios in frequency domain so as to provide corresponding scaled values in frequency domain that are indicative of the time delay of the signal travelling between the satellite and the receiver."

VII. The arguments of the appellant, insofar as they are pertinent to the present decision, are set out below in the reasons for the decision.

Reasons for the Decision

1. Reference is made to the transitional provisions for the amended and new provisions of the EPC, from which it may be derived which Articles of the EPC 1973 are

still applicable to the present application and which Articles of the EPC 2000 shall apply.

2. The appeal is admissible.
3. In the following, any references to the application relate to the application as published under the PCT as WO-A-01/42811.
4. Claim 1 is directed to a method for determining synchronisation of a signal transmitted by a GPS satellite and received at a GPS receiver. From the description it may be seen that the invention aims to overcome the problem of multipath signals. The received signal is in fact a combination of signals which have travelled along different paths to the receiver as a result of the reflection of the transmitted signal off natural or man-made obstacles before reaching the receiver. The aim of the invention is to provide an algorithm from which the synchronisation may be determined despite the signal distortion due to path length differences of the multipath signals. In the statement setting out the grounds for appeal, the appellant confirmed that "the concept of the present invention suggests a new C/A code signal phase search/acquisition algorithm for determining the delay/phase shift".
5. In order to determine the synchronisation in accordance with the method set out in the description, a number of processing steps must be performed on the received signal, these processing steps being defined in the algorithm (which eventually leads to the equation 22 on

page 24 of the statement setting out the grounds of appeal) on which the invention is based.

6. In particular, a Discrete Fourier Transform (DFT) is first applied to the received signal (page 7, lines 18-19). The DFT of the received multipath signal is then divided by the DFT of the expected transmitted signal (page 9, line 19 to page 10, line 1). The resulting transform value ratio of the i 'th bin (equation 12) is then divided by the transform value ratio of the $(i' + KN_{os})$ th bin (this division is represented in equation 14), from which "the delay can be estimated from these ratios by taking a weighted average after some processing of these ratios" (page 11, lines 17-18). The "processing" referred to here involves taking the argument of the resulting scaled value (page 12, lines 9-10) and then averaging this expression over an arbitrary subset of bins (page 14, lines 1-16).

7. It is established jurisprudence of the boards of appeal that the subject-matter defined in a claim should correspond to the technical contribution to the art made by the disclosure of the invention described in the application. In the present case, the description presents the specific algorithm derived therein as the solution to the problem of multipath signals. Indeed, the manipulation of the various terms in the derivation of the algorithm is aimed at arriving at an expression containing two distinct terms, one of which reflects the phase contribution of the mean (multipath-independent) delay Δ and the other of which reflects the phase contribution of the random factors associated with the incremental delay $\Delta'[k]$. This latter term may be considered as a noise term which may be made to

vanish when averaged over an appropriate subset of bins. This is a very specific manner of dealing with the multipath signals and the description does not suggest any other processing option. However, claim 1 is worded so generally that it covers every conceivable processing operation which may be performed on the transform value ratios to provide scaled values indicative of the time delay. Since the current application focuses on just one very specific algorithm and provides no suggestion that the teaching may in any way be extended to other algorithms or processing operations, there is nothing in the application which could justify the generality of claim 1.

8. As the examining division pointed out, the use of the generalised term "processing" in claim 1 leads to a lack of essential features in independent claim 1. Claim 1 neither sets out the algorithm to be applied in clear terms, nor does it include all of the above-mentioned essential steps. Instead, claim 1 simply instructs the reader to transform the received signal, to divide the frequency domain coefficients of the received signal by those of the expected signal and to "process" these ratios "so as to provide corresponding scaled values in the frequency domain". The failure to include all of the steps outlined in paragraph 4 above means that the independent claim does not contain all features which are necessary to solve the stated problem. This means that the independent claim lacks those features which are presented as being essential for solving the problem and consequently, the claim is not supported by the description (Article 84 EPC 1973).

9. The appellant argued that the application indicated that "other operations could be used to obtain the delay from the transform value ratios, such as a non-linear estimation of the delay directly from the transform value ratios" (page 13, lines 7-9). The appellant considered that since this statement suggests that alternative processing methods could be used, it was valid to draft the claim so as to cover every conceivable processing of the transform value ratios. However, the Board does not consider that this rather general statement in the description can justify the current breadth of claim 1. In the view of the Board, the application explains in detail how the specific problem of multipath signals is solved; a very specific processing method has been developed in which the random phase contributions of the multipath signals are made to cancel out thus permitting the determination of the non-random phase contribution of the received signal, i.e. the factor Δ , defined as the mean delay in the current application. Knowledge of the random signals is therefore not required. In the absence of any further explanation in the description, it is not clear whether a "non-linear estimation of the delay" would also exhibit the required independence from the incremental delays due to multipath propagation. Since there is no enabling disclosure in the application of any other process which could be applied to solve the stated problem, there is no justification for attempting to define a method in which any conceivable processing method may be applied.

10. Reimbursement of the appeal fee

Reimbursement of the appeal fee is dependent on the success of the appeal (Rule 103(1)(a) EPC). Since the present appeal is not allowable, there is no need to further discuss the question of whether a substantial procedural violation occurred.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

E. Görgmaier

P. Fontenay