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**Datasheet for the decision
of 21 July 2009**

Case Number: T 1203/06 - 3.4.01

Application Number: 01660103.1

Publication Number: 1160582

IPC: G01S 5/14, G01S 1/04,
H04B 7/185, G01S 1/02,
G01S 5/02, G01S 5/00, H04B 1/06

Language of the proceedings: EN

Title of invention:
Method and device for determining the phase of information,
and its use in a positioning system

Applicant:
Nokia Siemens Networks Oy

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 123(2)

Relevant legal provisions (EPC 1973):
-

Keyword:
-

Decisions cited:
-

Catchword:
-



Case Number: T 1203/06 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 21 July 2009

Appellant: Nokia Siemens Networks Oy
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 8 March 2006
refusing European application No. 01660103.1
pursuant to Article 97(1) EPC 1973.

Composition of the Board:

Chairman: B. Schachenmann
Members: G. Assi
P. Fontenay

Summary of Facts and Submissions

- I. The European patent application No. 01660103.1 (European publication No. 1 160 582) was refused by the examining division which, in its decision, held that the application did not meet the requirements of Articles 123(2), 83, 54(1),(2) and 56 EPC 1973.
- II. The applicant (appellant) lodged an appeal against the decision of the examining division.
- III. The appellant requested that the decision under appeal be set aside and a patent be granted on the basis of a set of claims according to a main request or first to fifth auxiliary requests filed with the statement setting out the grounds of appeal dated 16 June 2006.
- IV. On 8 April 2009 the appellant was summoned to oral proceedings scheduled to take place on 21 July 2009. On 30 April 2009 the Board issued a communication drawing attention to matters which seemed of special significance (Article 15(1) RPBA).
- V. The appellant did not file any comments or further requests in reply to the communication. The scheduled oral proceedings took place in the absence of the appellant's representative.
- VI. The wording of claim 1 of the main request reads as follows:

"A method for determining the phase of information modulated in a code-modulated signal transmitted by a satellite, in a receiver (MS), wherein at least partly

the same information is transmitted from at least a first and a second satellite (SV1-SV4) substantially simultaneously, the code-modulated signal transmitted from at least the first and the second satellite (SV1-SV4) is received, and a first acquisition step is performed, in which the receiver is synchronized with the code-modulated signal of at least the first satellite (SV1), **characterized** in that in the method, at least the following steps are taken:

- a determination step, in which a moment of a bit change of an information data bit in the code-modulated signal of the first satellite (SV1) is determined on the basis of the code-modulated signal of the first satellite without demodulating the code-modulated signal of the first satellite (SV1),
- a computing step to compute the difference in propagation time of the code-modulated signal transmitted by said first satellite (SV1) and the code-modulated signal transmitted by the second satellite (SV2) from the satellite (SV1, SV2) to the receiver (MS),
- a second acquisition step, in which the receiver is synchronized with the code-modulated signal of the second satellite on the basis of the difference in propagation time computed in the computing step by setting the moment of bit change on the basis of the moment of a bit change of an information data bit, determined in the determination step, and the difference in propagation time of the code-modulated signal

transmitted by said first satellite (SV1) and the code-modulated signal transmitted by the second satellite (SV2), computed in the computing step, as the moment of starting a coherent integration, and

- *a coherent integration step to receive the code-modulated signal of the second satellite (SV2) and to coherently integrate sequences of a certain length to improve the demodulability of the code-modulated signal."*

VII. The wording of claim 1 of the first auxiliary request differs from the wording of claim 1 of the main request in that the determination step reads as follows:

- "- *a determination step, in which a moment of a bit change of an information data bit in the code-modulated signal of the first satellite (SV1) is determined on the basis of the code-modulated signal of the first satellite without demodulating the navigation information from the code-modulated signal of the first satellite (SV1),"*

VIII. The wording of claim 1 of the second auxiliary request differs from the wording of claim 1 of the main request in that the feature "*a reference time is formed by a reference clock*" is added at the end of the pre-characterising portion and the feature "*the accuracy of the reference time is from 10 ms to 2 min in the beginning of the determination step*" is mentioned at the end of the claim.

IX. The wording of claim 1 of the third auxiliary request differs from the wording of claim 1 of the main request in that the feature *"a reference time is formed by a reference clock"* is added at the end of the pre-characterising portion and the feature *"the accuracy of the reference time is from 10 ms to 2 min in the beginning of the determination step"* is mentioned at the end of the claim. Moreover, the determination step reads as follows:

"- a determination step, in which a moment of a bit change of an information data bit in the code-modulated signal of the first satellite (SV1) is determined on the basis of the code-modulated signal of the first satellite without demodulating the navigation information from the code-modulated signal of the first satellite (SV1),".

X. The wording of claim 1 of the fourth auxiliary request differs from the wording of claim 1 of the main request in that the pre-characterising portion reads as follows:

"A method for determining the phase of information modulated in a code-modulated signal transmitted by a satellite, in a receiver (MS), wherein at least partly the same information is transmitted from at least a first and a second satellite (SV1-SV4) substantially simultaneously, the code-modulated signal transmitted from at least the first and the second satellite (SV1-SV4) is received, the signal strength being strong enough for acquisition but too weak for demodulation, and a first acquisition step is performed, in which the receiver is synchronized with the code-modulated signal of at least the first satellite (SV1),".

XI. The wording of claim 1 of the fifth auxiliary request differs from the wording of claim 1 of the main request in that the pre-characterising portion and the determination step read as follows:

"A method for determining the phase of information modulated in a code-modulated signal transmitted by a satellite, in a receiver (MS), wherein at least partly the same information is transmitted from at least a first and a second satellite (SV1-SV4) substantially simultaneously, the code-modulated signal transmitted from at least the first and the second satellite (SV1-SV4) is received, the signal strength being strong enough for acquisition but too weak for demodulation, and a first acquisition step is performed, in which the receiver is synchronized with the code-modulated signal of at least the first satellite (SV1)," and

"- a determination step, in which a moment of a bit change of an information data bit in the code-modulated signal of the first satellite (SV1) is determined on the basis of the code-modulated signal of the first satellite without demodulating the navigation information from the code-modulated signal of the first satellite (SV1),".

XII. All the requests further include an independent claim 21 for a positioning system and an independent claim 40 for an electronic device, the wording of which corresponds mutatis mutandis to the wording of the respective claim 1. The remaining claims 2-20, 22-39 and 41-42 of each request are dependent claims.

XIII. The revised version of the European Patent Convention or EPC 2000 entered into force on 13 December 2007. In the present decision, reference is made to "EPC 1973" or "EPC" for EPC 2000 (EPC, Citation practice, pages 4-6) depending on the version to be applied according to Article 7(1) of the Revision Act dated 29 November 2000 (Special Edition No. 1 OJ EPO 2007, 196) and the decisions of the Administrative Council dated 28 June 2001 (Special Edition No. 1 OJ EPO 2007, 197) and 7 December 2006 (Special Edition No. 1 OJ EPO 2007, 89).

Reasons for the Decision

1. The appeal is admissible.
2. An amended feature of claim 1 according to all the requests concerns the determination step. According to claim 1 of the main request and of the second and fourth auxiliary requests, a moment of a bit change of an information data bit in the code-modulated signal of the first satellite is determined on the basis of the code-modulated signal itself. A demodulation of the code-modulated signal of the first satellite is explicitly excluded in claim 1 of these requests. Claim 1 of the first, third and fifth auxiliary requests specifies that the navigation information from the code-modulated signal of the first satellite is not demodulated.
3. In the decision under appeal, the examining division considered that the amendments "*without demodulating the code-modulated signal of the first satellite*" and "*without demodulating the navigation information from*

the code-modulated signal of the first satellite" in claim 1 of the requests then on file did not meet the requirement of Article 123(2) EPC 1973.

4. The appellant contested this conclusion. In support of its view, the appellant drew attention to the sentence on page 11, lines 20-23, of the application as filed, according to which, after the receiving channel has been synchronized with the signal of a satellite, it is possible to start demodulation and storage of the navigation information transmitted in the signal, "*if necessary*". The appellant submitted that the expression "*if necessary*" indicated that the demodulation was optional.

5. Such an approach, however, does not constitute conclusive evidence in the Board's view, because the expression "*if necessary*" may also refer to the storage at least from a linguistic point of view.

According to the jurisprudence of the boards of appeal the provision of Article 123(2) EPC requires that amended subject-matter has to be derived directly and unambiguously from the application as filed. Thereby, the information resulting from the amended subject-matter should be considered by a skilled person, having due regard to the technical context as disclosed by the application. With this aim in mind, the further sentence on page 11, lines 25-29, which is also cited by the appellant, appears, at least at first sight, to confirm the appellant's interpretation of the former sentence on the same page, lines 20-23. It states that, according to a first preferred embodiment of the present invention, the navigation information "*does not*

need to be modulated and stored", but the positioning receiver must determine the chip and code phase of the signals received from the satellites.

A first issue regarding this citation concerns the term "*modulated*" which does not appear to be technically meaningful. In this respect, the appellant's view that it should be considered as an obvious translation error to be corrected in "*demodulated*" is acceptable.

Another issue is related to the fact that this citation concerns a preferred embodiment of the invention and as such should be considered having regard to the whole disclosure of the invention. In this respect, the application as filed consistently presents the invention as including the feature of the demodulation of the strong code-modulated signal of the first satellite. Attention is drawn, in particular, to the following disclosure:

- Figure 6 (page 10, lines 25 and 26), block 604 explained in page 12, lines 30-35 (read "*demodulates*");
- Page 11, line 36, to page 12, line 4 (read "*demodulate*");
- Page 14, lines 10-13 (read "*demodulation*");
- Claim 1 on page 17, lines 8-10 and 16-18;
- Claim 20 on page 20, lines 4-9 (read "*demodulation*");
- Claim 21 on page 20, lines 23, 24 and 30-32;
- Claim 39 on page 23, lines 22-25;
- Claim 40 on page 24, lines 6, 7 and 13-15;
- Claim 41 on page 25, lines 1, 2 and 8-10.

In essence, the disclosure of the invention is based on the assumption that the signal of a first satellite is so strong that the receiver can be synchronized with this signal and demodulate the navigation information encoded in the signal (page 12, lines 1-4). The disclosure is also based on the assumption that sufficiently strong signals are not received from the other satellites within sight of the receiver (page 12, lines 5-8). Thus, according to Figure 6, the strong signal of the first satellite is demodulated (block 604), whereas navigation data of the other satellites can be received from a mobile communication network (block 608).

It follows from the foregoing that, with regard to the strong signal of the first satellite, the expression "*if necessary*" in the sentence on page 11, lines 20-23, could reasonably refer to the storage of the demodulated navigation information transmitted, which storage is not imperative but depends on the following data processing. With regard to the signals of the other satellites within sight of the receiver, as they are not assumed to be sufficiently strong for demodulating the navigation data, demodulation is not carried out according to the present invention. In other words, demodulation would not be necessary.

The further sentence on page 11, lines 25-29, which per se appears to be ambiguous, should also be read having regard to the context so as to avoid undue interpretations inconsistent with the rest of the disclosure. As stated above, according to the invention the navigation information is not demodulated if the code-modulated signal transmitted by a satellite is not

strong enough. Thus, there would be no need for demodulation in this case. In the Board's view, this finding is consistent with the examining division's interpretation that the navigation information could be received from an external source (decision under appeal, paragraph bridging pages 3 and 4). In summary, the sentence on page 11, lines 25-29, does not appear to render optional the demodulation of the strong signal of the first satellite.

The appellant also referred to page 12, lines 1-16. This paragraph does not appear to provide support for the amendment at issue either. Indeed, the disclosure in page 12, lines 8-16, should not be understood as annulling the assumptions made in page 12, lines 1-8. It is stated that, if a strong signal is not available, the receiver may try to perform acquisition of a signal by coherent integration for more than 1 ms (Figure 6, block 603; page 12, lines 25-27). This case, however, does not invalidate the fact that in the rest of the flow chart of Figure 6 and in the method of claim 1 of the application as filed the received signal of the first satellite, after acquisition, is demodulated in the determination step (page 12, lines 30-35). The Board thus finds unconvincing the appellant's view that the paragraph at issue did not say that there should be at least one signal strong enough for demodulation.

6. In conclusion, the application as filed does not provide a direct and unambiguous support for the amendment at issue.
7. Hence, contrary to the provision of Article 123(2) EPC, claim 1 according to all the requests on file has been

amended in such a way that it contains subject-matter which extends beyond the content of the application as filed.

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar

The Chairman:

M. Kiehl

B. Schachenmann