BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [X] To Chairmen

D E C I S I O N
of 28 April 1999

Case Number: T 0365/98 - 3.5.1

Application Number: 89118458.2

Publication Number: 0365885

IPC: H04B 7/204

Language of the proceedings: EN

Title of invention:
Satellite cellular telephone and data communication system

Patentee:
Motorola, Inc.

Opponent:
Agence Spatiale Europeenne
Alcatel Space Industries

Headword:
-

Relevant legal provisions:
EPC Art. 54, 123(2)

Keyword:
"Novelty (no)"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0365/98 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 28 April 1999

Appellant: (Proprietor of the patent)
Motorola, Inc.
1303 East Algonquin Road
Schaumburg
IL 60196 (US)

Representative:
Hudson, Peter David
Motorola
European Intellectual Property
Midpoint
Alencon Link
Basingstoke
Hampshire RG21 7PL (GB)

Respondent: (Opponent)
Agence Spatiale Europeenne
8, rue Mario Nikis
75738 Paris (FR)

Representative:
Doireau, Marc
Cabinet Orès
6, avenue de Messine
75008 Paris (FR)

(Opponent)
Alcatel Space Industries
26 Avenue Jean Francois Champollion
31 000 Toulouse (FR)

Representative:
Smith, Bradford Lee
Compagnie Financiere Alcatel
Dépt. Propriété Industrielle
30, avenue Kléber
75116 Paris (FR)

Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 16 March 1998 revoking European patent No. 0 365 885 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: P. K. J. van den Berg
Members: R. S. Wibergh
S. C. Perryman

Summary of Facts and Submissions

1. This is an appeal by the proprietor of European Patent No. 0 365 885 against the decision of the Opposition Division to revoke the patent.

II. Respondent I and respondent II had opposed the patent on the grounds that the subject-matter of the claims did not involve an inventive step having regard in particular to the following documents:

E3: Proceedings of the 33rd Annual AAS International Conference, Boulder, CO, Oct 26-29, 1986, pages 1669-1676, and

D1: Proceedings of the IEEE, vol. 72, No. 11, November 1984, pages 1627-1636.

III. The Opposition Division decided on the proprietor's main request (the patent as granted) and two auxiliary requests. The main request and the first auxiliary request were refused for lack of novelty with respect to E3. The second auxiliary request was found to involve additional subject-matter (Article 123(2) EPC).

IV. On 26 March 1999 the appellant filed four new requests. Claim 1 according to the **main request**, which was identical with claim 1 as granted, read as follows (omitting the reference signs; the asterisks refer to the places where features were added according to the auxiliary requests described further below):

A satellite cellular communication system for communicating among a plurality of users comprising:

a plurality of satellite switching means positioned in low-earth orbit; and
link means for coupling said users to one of said plurality of satellite switching means establishing a communication link between selected ones of said users via said satellite switching means (*);
each of said plurality of satellite switching means including first means for handing-off the communication link between said satellite switching means (**);
each of said plurality of satellite switching means including a plurality of cell means for providing the communication link; and
each of said plurality of satellite switching means including second means for handing-off the communication link from a first to a second cell means within the same satellite switching means (***).

According to the **first auxiliary request** the feature "including handing-off said communication link as satellites move out of the range of a particular said user" was added at position (**) and the feature "and wherein said satellite switching means hands-off the communication link to another cell and determines how switching of the communication link is to occur" at position (***).

According to the **second auxiliary request** the feature "including handing-off said communication link as satellites move out of the range of a particular said user, wherein said first means for handing-off determines how switching of said communication link is to occur" was added at position (**).

According to the **third auxiliary request** the feature

"wherein each said satellite switching means is a distributed local processor and determines how switching of the communication link is to occur" was inserted at position (*), the feature "including handing-off said communication link as satellites move out of the range of a particular said user" at position (**), and the feature "and wherein said satellite switching means hands-off the communication link to another cell" at position (***).

The main request and the first two auxiliary requests were identical with the corresponding requests considered by the Opposition Division. The third auxiliary request had not been presented before.

V. The appellant, referring to various passages of the patent application as originally filed, explained what was believed to be the correct interpretation of claim 1, and in particular of the expression "handing-off". E3, which was said to be of a speculative character, neither anticipated the invention, nor rendered it obvious.

VI. Respondent I argued that the subject-matter of the requests was not new over E3. Respondent II was of the opinion that Article 123(2) EPC had been infringed.

VII. The appellant requested that the decision under appeal be set aside and that the patent be maintained as main request as granted or on the basis of the first, second or third auxiliary requests submitted on 26 March 1999.

VIII. The respondents requested that the appeal be dismissed.

Reasons for the Decision

1. *Construction of the invention*

1.1 The invention is a satellite cellular system. This system comprises satellites in low-earth orbit, ie at a height at which satellites are not geostationary but have a period of perhaps a few hours. The satellites are capable of switching telephone calls from users on earth. Since the satellites are constantly moving, a communication link set up between two users needs generally to be redefined during the call. This process, a kind of dynamic re-routing, is referred to as handing-off. The handing-off can be between different "cells" - corresponding to different antenna beams - of one and the same satellite, or between two satellites. In the first case one speaks of intra-satellite handing-off, in the second case of inter-satellite handing-off. According to claim 1 (of all requests) the inter-satellite handing-off is performed by a "first means for handing-off" and the intra-satellite handing-off by "second means for handing-off".

1.2 A crucial point throughout the opposition proceedings has been how the term "handing-off" in claim 1 should be understood, taking into account the way it is used in the description. Briefly stated, the appellant is of the opinion that the expression not merely implies that the physical switching is performed in the satellites, but that the complete control of the handing-off process is located there. In particular, the invention comprises no external control on earth or in a geostationary satellite. The respondents, on the other

hand, argue that there is no basis for such a restricted interpretation since the whole specification is silent on what kind of handing-off control is used and where it might be situated.

1.3 The Opposition Division was of the opinion that claim 1 cannot be considered as defining a situation where complete responsibility for handing-off is resident in the satellites.

1.4 The Board agrees with the Opposition Division's conclusion. The reasons for this view will be given below, where reference will be made to various examples from the text of the patent which were cited by the appellant during the oral proceedings before the Board.

1.5 The appellant has pointed out that, according to the "summary of the invention", the invention is different from earlier systems in that the satellites themselves establish the communication link between users. It is subsequently made clear that because of satellite motion calls have to be handed off to an adjacent cell either of the same satellite or of a neighbouring satellite.

The Board finds that this amounts to a disclosure of intra-satellite and inter-satellite handing-off as such. But these passages provide no details, in particular about the handing-off control.

The appellant has further cited passages indicating that each satellite is a distributed processor which determines how switching of the call is to occur. It has been argued that "switching" must be understood as

not just establishing the call, but also maintaining it. This would mean that the handing-off is determined by the satellites.

The Board takes the view that although this interpretation of "switching" is not in itself an unreasonable one, it is not unambiguously implied by the present context. As already noted, the "summary of the invention" states that the switches establish a communication link between the users. Here the word "establish" suggests that "switching" should be understood as setting up the initial link, without consideration of how the link might be maintained. It therefore seems that, in the absence of an express indication, the skilled person would not necessarily have associated the term "switching" occurring later in the description with maintaining the call. What the cited passage discloses is, in the Board's view, merely that a call is established under the control of the satellites. It does not say anything about re-routing, or handing-off, of the call. It should also be noted that establishing and maintaining need not be controlled by the same unit, as will be seen further below (point 2) where the prior art in E3 is discussed.

The appellant has also quoted a passage which states that each satellite "is a local switch for a particular area, but the area is constantly changing. Therefore, calls are handed-off as satellites move out of the range of a particular telephone user". Nevertheless, the Board cannot see that this information goes beyond what has already been established, namely that the satellites act as switches and that handing-off must take place (the passive construction "are handed-off"

was commented upon in the decision under appeal). Again, the handing-off control is left undefined.

It is furthermore noted that claim 6 mentions "one cell means operating to hand-off said established communication link between users to another one of said cell means". This passage seems to be the strongest indication of a connection between the cell means (situated in the satellites) and the handing-off process. But again, it is not unambiguously disclosed that the satellites have exclusive control over the handing-off. The meaning of "operating" might simply be that the cell means are (somehow) involved in the handing-off. This would be little more than a trivial observation.

1.6 Nor can the Board see that an overall consideration of the specification supports the appellant's understanding of the invention. It is true that there is no mention of any kind of switching control besides the satellites. It is also true that the appellant's interpretation is consistent with the teaching of the patent. This is however not conclusive. The fact that a controlling earth station is not described does not necessarily mean that there is none or could not be one - it may just as well be that the issue of handing-off control was never contemplated at the time the application was drafted. Nor is consistency sufficient - in fact, neither the appellant's nor the respondents' interpretations of the invention seem to contradict the patent specification in any way.

1.7 The Board thus finds that the invention as it has been disclosed concerns a satellite cellular system

comprising satellites which are capable of establishing calls autonomously and which contain (some) means for intra-satellite and inter-satellite handing-off. The invention is however **not** limited, and could not be limited without infringing Article 123(2) EPC, to a system in which the complete handing-off control is contained in the satellites.

2. *The appellant's main request*

The closest prior art document, and the only one considered in the decision of the Opposition Division, is E3. It deals in particular with a system called MSS (Multiple Satellite System). This system comprises satellites which are in low earth orbits and employ packet switching technology, which implies that the satellites contain switching means. As to handing-off, it is said on page 1671 that when "a cell passes over, the user's receiving/transmitting antenna would adjust to its new frequency and an on-board computer in the satellite, perhaps under the direction of a traffic routing (and billing) ground station, would ensure that communication is not interrupted". The Board is satisfied that the skilled person would regard this statement as an indication that means for intra-satellite handing-off are present in the satellites. It is further said on page 1674 that "satellite changeover is required" as satellites move. This is regarded as referring to inter-satellite handing-off. Since, trivially, handing-off is not possible without "handing-off means" (of some kind) within the satellites, such means are also disclosed in E3. It is not clearly disclosed that the complete control of handing-off could be performed by the satellites, but

this becomes irrelevant with the Board's understanding of the invention according to the patent in suit.

The Board thus concludes, as did the Opposition Division, that the subject-matter of claim 1 is not new.

3. *The appellant's first auxiliary request*

In claim 1, two additional features have been introduced.

First, it is specified in connection with the first means for handing-off that handing-off of the communication link occurs as satellites move out of the range of a particular user. The Board sees this merely as a clarification of the expression "handing-off", without limiting effect.

Second, it is specified that the switching means hands off the communication link to another cell and determines how switching of the communication link is to occur. In accordance with the Board's interpretation of the invention, "switching" here refers to the establishment of a link. It appears furthermore appropriate to understand the word "determines" in the light of the complete specification as implying that the satellites have full control over the establishment of the link.

In this context the respondents have pointed to the reference made in E3 to Arpanet: "...the MSS would rightly be dubbed the 'Arpanet in the Sky'. The objective of the MSS is not solely to provide a highly

survivable, in fact self-healing, jam-resistant network...". The respondents argue that the salient characteristics of Arpanet, known eg from D1, would be part of the skilled person's general knowledge.

The appellant, on the other hand, is of the opinion that the reference to Arpanet is void of any significance and that it is anyway fully obscure what features Arpanet may or may not have possessed.

The Board takes the view that a technical reference of this kind, however brief, cannot be neglected. The term has clearly been included in order to convey in a compact form some information which the skilled person would already possess or could easily look up. According to D1 Arpanet is a network in which the nodes themselves calculate their routing tables. The Board agrees with the respondents that the skilled person would indeed realise from the context ("survivable", "jam-resistant") that the author of E3 had Arpanet's distributed switching control in mind. This feature may be indirectly stated, but the reference to Arpanet is explicit and - in the Board's view - leaves no real room for doubt as to its meaning.

It is therefore concluded that E3 discloses also that the satellites determine how the switching (establishment) of the communication link is to occur.

Thus the subject-matter of claim 1 lacks novelty.

4. *The appellant's second auxiliary request*

According to claim 1 of this request the first means

for handing-off determines how switching of the communication link is to occur.

This feature makes good sense only with the appellant's construction of the invention, according to which "switching" includes also maintaining the communication link. With the Board's understanding of the invention, however, "switching" and "maintaining/handing-off" must be regarded as separate operations.

The Opposition Division noted that the means for handing-off could at most be identified with the cell means (as stated in claim 6) and that the cell means has not been described as determining the switching, with the consequence that the addition contravenes Article 123(2) EPC. The Board finds this conclusion justified.

5. *The appellant's third auxiliary request*

Claim 1 according to this request contains some of the amendments already discussed above in connection with the first auxiliary request as well as the feature "wherein each said satellite switching means is a distributed local processor and determines how switching of the communication link is to occur".

The Board finds that, due to the limited meaning that can be attributed to the expression "switching", these features are also known from E3 because of its reference to Arpanet.

Thus the subject-matter of claim 1 is not new.

6. It follows that none of the appellant's requests can be granted.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Kiehl P. K. J. van den Berg