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D E C I S I O N
of 4 December 2002

Case Number: T 0040/02 - 3.5.1

Application Number: 95937975.1

Publication Number: 0795211

IPC: H01Q 21/22, H01Q 21/08

Language of the proceedings: EN

Title of invention:
An antenna feed network arrangement

Applicant/Patentee:
Nortel Networks Limited

Opponent:
Kathrein-Werke KG

Headword:
Antenna feed/NORTEL

Relevant legal provisions:
EPC Art. 54, 100(a)
EPC R. 67, 68(2)

Keyword:
"Novelty - all requests - (no)"
"Substantial procedural violation (no)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0040/02 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 4 December 2002

Appellant: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 9 November 2001 revoking European patent No. 0 795 211 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: S. V. Steinbrener
Members: A. S. Clelland
E. Lachacinski

Summary of Facts and Submissions

I. This is an appeal against the decision of the opposition division to revoke European patent No. 0 795 211 on the ground that the subject-matter of claim 1 of a main request and first and second auxiliary requests lacked an inventive step. In its decision the opposition division referred to the following documents:

D1: EP-A-0 508 877

D4: Transactions of the Institute of Electronics, Information and Communication Engineers, Tokyo, JP, Vol. E74, June 1991, No. 6, pages 1547 to 1555, Yamada et al: "Base and Mobile Station Antennas for Land Mobile Radio Systems".

D6: O. Gotthard: "FM- und TV-Sendeantennensysteme", published by Kathrein Werke KG, Rosenheim, DE, 1989, pages 10, 11, 32, 52 and 60 to 63.

II. In the notice of appeal the patentee (appellant) requested that the opposition division's decision be set aside and that "an order to reinstate the European Patent be issued", i.e. for the patent to be maintained as granted. In the subsequently filed statement of grounds of appeal the appellant maintained first and second auxiliary requests for maintenance in amended form, filed in the proceedings before the first instance and requested oral proceedings as a precaution. It was argued that a substantial procedural violation had been committed because the impugned decision was insufficiently reasoned, so that the case should be remitted to the first instance and the appeal

fee refunded.

III. The opponent (respondent) requested that the appeal be dismissed and made an auxiliary request for oral proceedings.

IV. A communication was issued by the Board, inviting the parties to oral proceedings to take place on 4 December 2002. In a written submission in response to this communication the appellant maintained the main request and filed claims of new first and second auxiliary requests, together with a proposal for a third auxiliary request. A fourth auxiliary request was for remittal to the opposition division for reconsideration. In connection with the issue of a substantial procedural violation the appellant made reference to an unspecified "seventh auxiliary request".

V. In a further submission before the oral proceedings and following a statement from the respondent that they would be speaking German, the appellant insisted that English remain as the language of the proceedings. The Board thereupon arranged for interpreting facilities from English to German and vice-versa.

VI. At the appointed time for the oral proceedings on 4 December 2002 it was established that the appellant was not present. The proceedings were thereupon adjourned for one hour to enable the Board’s Registrar to investigate. It was determined that the appellant had been duly summoned. The appellant’s representative was thereupon contacted and stated that she would not be attending the oral proceedings. The Board accordingly held the oral proceedings in the absence of

the appellant.

VII. The respondent requested that the appeal be dismissed.

VIII. Claim 1 of the **main request** reads as follows:
"A linear antenna array comprising a number of antenna elements and a feed network, wherein the feed network is operable to apply non-progressive steps in phase distribution to one or more selected groups of two or more antenna elements to provide a null-free coverage over a specific part of a resultant radiation pattern."

IX. Claim 1 of the **first auxiliary request** adds to claim 1 of the main request that the null free coverage refers to "the nulls nearest a central lobe of the pattern".

X. Claim 1 of the **second auxiliary request** adds to claim 1 of the main request that the non-progressive steps in phase distribution comprise "a step increase and a step decrease in the phase distribution".

XI. Claim 1 of the **third auxiliary request** combines the subject-matters of claim 1 of the first and second auxiliary requests.

XII. Claim 7 of each of the requests is a method claim directed to subject-matter corresponding to that of the respective claim 1.

XIII. At the end of the oral proceedings the Chairman closed the debate and announced the Board's decision.

Reasons for the Decision

1. *Admissibility of the Appeal*

The appeal satisfies the requirements mentioned in Rule 65(1) EPC and is consequently admissible.

2. *Substantial procedural violation*

2.1 In the statement of grounds of appeal the appellant argued that the impugned decision was insufficiently reasoned; there were only bare statements as to what was shown by the cited art and no proper reasoning, particularly as to which document constituted the closest prior art and why the skilled person would or would not look for or find the solution or features missing from that document. The lack of a properly reasoned decision gave rise, it was argued, to a substantial procedural violation.

2.2 In a subsequent submission the appellant made a fourth auxiliary request for remittal to the opposition division for reconsideration, but no further reference was made to the above argument other than the statement that "we propose to make no further submissions on this point, other than to use it as a basis for the seventh auxiliary request" (Board's underlining, see page 1, third paragraph of fax of 5 November 2002). There is no reference in any submission to a seventh - or indeed to a fifth or sixth - auxiliary request, which leads the Board to conclude that the appellant's intention was to refer to the fourth auxiliary request , i.e. remittal is requested on the ground of a substantial procedural violation.

2.3 The Board notes that in the impugned decision D4 and D6 are discussed in detail in connection with novelty, see

paragraph 1 of the Reasons, whilst the argument on inventive step which led to revocation is given, somewhat more briefly, at paragraph 2. The reasoning is admittedly confused by the reference, for no apparent reason, to an international preliminary examination report, followed by reference to D1. Nevertheless, the combination of documents which led to the opposition division's finding of lack of inventive step is clear, as is the reason they are combined. This is the case for all three requests.

2.4 The Board therefore takes the view that the arguments which led to revocation are both understandable and adequate, so that the decision is sufficiently reasoned (Rule 68(2) EPC).

2.5 There is accordingly no justification for remitting the case to the first instance. Moreover, for the reasons given below the appeal is not allowable, so that the issue of reimbursement of appeal fees does not arise (Rule 67 EPC).

3. *Technical background*

3.1 Antenna arrays for cellular radio are designed to provide null-free coverage of a sector within a specified area or cell; it is undesirable for the array to illuminate adjacent cells, and to limit coverage each array is usually tilted downwards either mechanically or electrically. Such a down-tilt can be provided electrically by progressive increases in phase shift along the length of the array.

3.2 The down-tilt however gives rise to a further problem, namely that nulls in the vertical antenna pattern are

also tilted downwards and can in consequence affect users. The problem which the claimed invention seeks to solve is to provide a null-free radiation pattern (see column 1, line 39 to column 2, line 22).

3.3 It is observed that although the problem is described in the context of down-tilt, the independent claims do not include features which require such a tilt.

4. *Novelty (main request)*

4.1 In the Board's view the single most relevant document is D6, which discloses a broadcast antenna with vertically stacked elements, see Figure 3.28 and the associated text at page 60. Claim 1 is not limited to a cellular radio antenna and the Board takes the view that the broadcast antenna of D6 constitutes a linear antenna array within the terms of the claim.

4.2 Feeding the elements with constant phase and amplitude is said at page 60 of D6 to give rise to two problems, high-angle radiation and signal nulls. By the use of a progressive phase distribution, see paragraph 3.7.2 and Figure 3.31 at page 61, the high-angle radiation is reduced, whilst the use of a non-progressive phase distribution serves to fill in nulls, see paragraph 3.7.3 and Figure 3.32 at page 61, and paragraph 3.7.6 and Figure 3.37 at page 63.

4.3 The appellant argued that D6 did not disclose "non-progressive steps in phase distribution". However, in the light of Figures 3.32 and 3.37 this is not the case, given that the phase must differ between discrete antenna elements in steps. It can moreover be seen from Figure 3.32 that the phase does not increase

progressively but, starting from a reference element 1, at first decreases between elements 1 and 3, then increases at a constant rate for elements 3 to 9, and finally increases at an accelerating rate from elements 9 to 12.

4.4 The appellant also argued in the written submissions that the wording of claim 1 required the non-progressive steps to be supplied to selected groups of two or more antenna elements whereas in D6 the distribution was to individual elements. In the course of the oral proceedings the respondent was able to satisfy the Board that in D6 each feed is to two antenna elements, the basic unit being shown in Figures 2.6 and 2.7 as being a dipole pair. The antenna mast shown in Figure 3.14 at page 52 can be seen to use such dipole pairs for Band II and Band III broadcasting, whilst they can be seen schematically in Figures 3.31, 3.32, and 3.36 to 3.38. The Board accordingly takes the view that inasmuch as each feed point is for a dipole pair, a selected group of two antenna elements within the meaning of the claim is fed. Finally, the solid graph line in Figure 3.32 shows that a null-free vertical coverage is provided.

4.5 Since all the features of claim 1 are present in D6 it follows that the claim lacks novelty, Article 54 EPC. The main request is accordingly not allowable.

5. *Novelty (first auxiliary request)*

5.1 Claim 1 of this request adds to claim 1 of the main request that the null free coverage refers to "the nulls nearest a central lobe of the pattern". From Figure 3.32 of D6 it can be seen that the known array

provides null filling for the null nearest the central lobe of the antenna pattern.

5.2 The subject-matter of claim 1 of the first auxiliary request accordingly lacks novelty and the request is therefore not allowable.

6. *Novelty (second auxiliary request)*

6.1 Claim 1 of this request adds to claim 1 of the main request that the non-progressive steps in phase distribution comprise "a step increase and a step decrease in the phase distribution". The Board understands this to mean that the phase of the signal changes across the array in steps which require an increase in phase difference between some adjacent elements and a decrease on others.

6.2 This claim adds no substantive limitation to claim 1 of the main request. As has already been noted, discrete elements fed with different phases imply phase steps, whilst the reference to "non-progressive steps" implies that with respect to a reference phase the phase of some adjacent elements will increase and that of others will decrease. This is exactly what is shown by Figure 3.32 of D6, see point 4.3 above.

6.3 The subject-matter of claim 1 of the second auxiliary request accordingly lacks novelty and the request is therefore not allowable.

7. *Novelty (third auxiliary request)*

7.1 This request proposes a combinations of the additions of the first and second auxiliary requests. Since

claim 1 of the first auxiliary request lacks novelty and that of the second auxiliary request adds nothing to claim 1 of the main request, it follows that the proposed claim 1 will also lack novelty. The request is therefore not allowable.

8. There being no allowable requests, it follows that the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Kiehl S. V. Steinbrener