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D E C I S I O N
of 27 September 2002

Case Number: T 0221/01 - 3.5.1

Application Number: 91200067.6

Publication Number: 0440276

IPC: H04B 10/20, H04B 10/16

Language of the proceedings: EN

Title of invention:
Optical fibre telecommunications line with separate service channels

Patentee:
PIRELLI CAVI E SISTEMI S.p.A.

Opponent:
Robert Bosch GmbH
SIEMENS INFORMATION AND COMMUNICATION NETWORKS S.p.A.

Headword:
Optical fibre/PIRELLI

Relevant legal provisions:
EPC Art. 56, 84, 111(1), 114(2), 123(2)

Keyword:
"Late-filed evidence (admitted)"
"Remittal to the Opposition Division (no)"
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0221/01 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 27 September 2002

Appellant: (Opponent 02)
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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 15 December 2000 concerning maintenance of European patent No. 0 440 276 in amended form.**

Composition of the Board:

Chairman: S. V. Steinbrener
Members: R. S. Wibergh
S. C. Perryman

Summary of Facts and Submissions

I. This is an appeal by Opponent 02 against the decision of the Opposition Division finding European Patent No. 0 440 276 in amended form to meet the requirements of the Convention.

II. Opponents 01 and 02 had opposed the patent on the grounds that the invention was not new or did not involve an inventive step (Article 100(a) EPC).

III. The Opposition Division held that the invention as defined in claim 1 filed during oral proceedings on 14 September 2000 met the requirements of the EPC. A document filed by Opponent 02 at the oral proceedings,

E10: J. Dörner, "Neues LWL-System überträgt 140-MBit/s-Signale", Telcom Report, No. 5, 1986, p. 293-301,

was not admitted into the proceedings as being of less relevance than other documents already on file.

IV. Opponent 02 (appellant) lodged an appeal against this decision. In the statement setting out the grounds of appeal it was argued that the patent had been amended in a way which contravened Article 123(2),(3) EPC, that claim 1 was not clear and that its subject-matter did not involve an inventive step. Three new documents were cited, in particular

E11: US-A-4 406 919.

V. Oral proceedings before the Board were held on 27 September 2002. The respondent filed a new set of claims 1 to 7 and two amended description pages.

Claim 1 read as follows:

"Optical fibre transmission line, comprising:
a) at least one emission station (1) and one reception station (4) of telecommunications signals; and
b) at least one optical amplifier (6, 8),
characterized in that it comprises:
c) means (9, 10) for injecting and for extracting optical service signals from the optical fibre line (3), wherein
d) said means comprise one emission and one reception unit (10) of optical service signals,
e) said reception unit (10) being suitable for receiving from the optical line and said emission unit (10) being suitable for emitting towards the same service signals, constituted by communication or control signals, electrically taken from said reception unit (10) and supplied to said emission unit (10), in the form of optical signals having a wavelength which is substantially different from the wavelength of the telecommunications signals,
f) wherein said reception and said emission units (10) are associated with a corresponding optical coupler (9), inserted along the fibre line (3) for extracting from and, respectively, for injecting into said optical fibre line (3) the optical service signals,
g) with the optical amplifier (6, 8) or with each optical amplifier there being associated at least one means (9, 10) for injecting and for extracting optical service signals,
h) there being present at at least one optical amplifier a reception unit (10) and an emission unit (10) of service optical signals and corresponding optical couplers (9) inserted along the line fibre (3), upstream and downstream from the optical amplifier (8),

respectively, in the direction in which the service signals are to be sent,
i) said reception and emission units (10) are connected together electrically, with the interposition of electronic amplification means (11), for receiving optical service signals from the line (3), for transforming them into electrical signals, for amplifying them electronically and for converting the amplified electrical signals into optical signals at the service wavelength and for sending them along the line".

The appellant and Opponent 01 argued that claim 1 was not clear and that its subject-matter did not involve an inventive step.

The patent proprietor (respondent) asked the Board to remit the case to the Opposition Division if E10 or one or more of the documents filed with the grounds of appeal were admitted into the proceedings. The Board did not allow this request but decided both to admit the documents and to examine the issue of inventive step with respect to these documents without remittal.

VI. The appellant (Opponent 02) and other party (Opponent 01) requested that the decision under appeal be set aside and the patent be revoked.

VII. The respondent (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained on the basis of:

Claims: 1 to 7 filed during oral proceedings on 27 September 2002,

Description: columns 1 to 4 filed during oral proceedings on 27 September 2002, columns 5 to 8 of the patent specification,

Drawings: 1/2, 2/2 (ie pages 9, 10) of the patent specification.

VIII. At the end of the oral proceedings the Chairman announced the Board's decision.

Reasons for the Decision

1. *Amendments*

Present claim 1 corresponds essentially to dependent claim 7 as granted. The appellant has argued that the additional features of claim 2 as initially filed should have been added to claim 1 considering that, due to the dependencies between the claims, original claim 7 contained all the features of claims 1, 2 and 6. The Board is however of the opinion that the additional features of claim 2 are redundant with respect to present claim 1 so that their omission cannot lead to a new embodiment being created. Furthermore, the Board sees no reason for objecting to the omission in claim 1 of those features of original claim 6 which serve only to define the optical amplifier (ie the first ten lines of claim 6 as published). These features are technically unrelated to the invention as defined in present claim 1 and would - in spite of the claim dependencies - have been regarded by the skilled person as optional.

Thus no subject-matter has been added to the patent (Article 123(2) EPC). Furthermore, the scope of protection has not been extended (Article 123(3) EPC).

2. *Clarity of the claims*

According to Article 102(3) EPC a patent can be maintained in amended form only if it meets the requirements of the EPC. One such requirement is that the claims be clear, Article 84 EPC. On the other hand, objections should normally not be made to lack of clarity which does not arise out of the amendments made (see eg "Case Law of the Board of Appeal of the European Patent Office", 4th edition 2001, p.488). In the present case claim 1 contains the feature that "said reception and emission units (10) are connected together electrically, with the interposition of electronic amplification means (11)" (see feature i). The word "said" refers to the reception unit and emission unit upstream respectively downstream of the optical amplifier mentioned immediately before (see feature h). The general concept of reception and emission units is however introduced already in feature d. If the antecedent to "said" were taken to be this earlier mentioning, the claim would - as both opponents have argued - cover embodiments in which the electronic amplification means are not necessarily connected between a reception unit and an emission unit upstream respectively downstream of an amplifier, but between any two such units. In the Board's view, however, the opponents' interpretation is not a first choice considering that the words "said reception and emission units" would normally refer to the latest mentioning of these units. Nor does the description support such a reading. Moreover, even if this would be an ambiguity

it was present already in the claims as granted. The Board therefore sees no reason for objecting to the wording in question under Article 84 EPC.

3. *Documents E10 and E11*

3.1 Document E10 was filed by the appellant at the oral proceedings before the Opposition Division. The Opposition Division did not admit it into the proceedings. In support for this decision the Opposition Division considered that E10 neither disclosed a wavelength division multiplexing system nor all-optical regeneration and that the skilled person would have needed three specific steps to go from E10 to the invention (see the minutes of the oral proceedings, point 8). For these reasons E10 was found to be of less relevance than certain other documents on file.

3.2 The Board finds however that E10 should be admitted. The document is not *prima facie* irrelevant. On the contrary, its Figure 4, showing a structure consisting of an amplifier (or regenerator) and reception and emission units connected by electronical amplifying means, appears to be more similar to feature i of claim 1 than anything else in the cited prior art. Feature i, taken from claim 7 as granted, was added to claim 1 only at the oral proceedings before the Opposition Division. The relevance of E10 thus increased when the claim was amended, and it was only natural that the appellant referred to it at this point. Thus, insofar as its introduction was a response to the amendments made to the patent the document was in fact submitted "in due time" (cf Article 114(2) EPC) and the Opposition Division had no discretion to

disregard it.

3.3 For the same reasons document E11, which is similar to E10 and was cited by the appellant in the grounds of appeal, is admitted into the proceedings.

4. *Remittal to the Opposition Division*

The patent proprietor has asked that the case be remitted to the Opposition Division if E10 or E11 are admitted into the proceedings. The Board however chooses to exercise its discretion under Article 111(1) EPC itself to continue the examination. The Opposition Division has indicated in some detail their reasons for not admitting E10 (see point 3.1 above) and it appears safe to assume that for the same reasons the Division would have found the invention to involve an inventive step. As to E11, this document is so similar to E10 that it can be expected to have led the Opposition Division to the same conclusion. The patent proprietor therefore does not really lose an instance if the Board proceeds with the case without remittal. Furthermore, considering that the patent is based on an application which was filed as early as 1991 further delays in the opposition procedure are clearly undesirable.

5. *Inventive step, starting out from E11*

5.1 At the oral proceedings before the Board the appellant argued mainly on the basis of E11. This document (see Figure 1 and columns 3 and 4) discloses an electrical transmission line on which a digital data signal and a telemetry signal are transmitted in different frequency bands. At a branch point the signals are separated. The digital signal and the telemetry signal are regenerated

independently of each other, but there are connections between the two by way of which test results (eg the error rate of the digital data signal) are transmitted.

5.2 The invention according to claim 1 is an optical fibre line on which communication data and service signals are transmitted in optical form at "substantially different" wavelengths. The appellant has argued that such a configuration was merely the optical equivalent of the transmission of electrical signals in different frequency bands. According to the appellant, since service signals must be available at the repeater stations for repair and inspection purposes they had to be converted into electrical signals. The communication signal could however be amplified optically, as was well known in the art. When the service signals were sent on they must be converted into optical signals again, but since their wavelength was different from that of the communication signal they could not be applied to the same optical amplifier. It was obvious, or even inevitable, that they should be amplified electronically, ie regenerated, before being converted.

5.3 Opponent 01 has additionally submitted that the invention is not an inventive combination but rather an aggregation of features each known *per se* from the prior art.

5.4 The Board takes the view that although some of the features of the invention might well be obvious in an optical system where communication data and service signals are transmitted along an optical transmission fibre, it would be to expect too much of an average skilled man to go from E11 to the invention as now defined in claim 1. The reasons are set out below.

5.5 It is first noted that E11 is not concerned with optical communication and service signals but with electrical communication and telemetry signals. The respondent has for this reason expressed doubts as to E11 being the closest prior art document. The Board tends to share these doubts. It also cannot be taken for granted that the mere use in E11 of a standard technique such as frequency division of electrical signals would lead the skilled person to consider wavelength division multiplexing of optical signals. This appears to be hindsight.

5.6 Still, since it was known (eg from E10) to transmit optical communication signals together with service signals in some form it was probably within the reach of the skilled person to suggest that the service signals should be transmitted optically at a substantially different wavelength. (The technique generally referred to as wavelength division multiplexing is described in several documents on file.) The appellant has pointed out that service signals must be available in electrical form at the repeaters, which suggests that reception units and emission units should be provided for converting the optical signals transmitted along the line into electrical service signals, and vice versa.

5.7 There remain however features h and i of claim 1. It need thus be examined whether E11 suggests inserting a reception unit and an emission unit upstream respectively downstream of an **optical** amplifier and connecting them by means of an **electronic** amplifier. The Board takes the view that in fact it does not, since such a configuration would be incompatible with the overall teaching of E11. According to E11

"connections exist" between the regenerative repeater for the digital signal and the repeater for the telemetry signal (column 3, bottom). One reason for this is that the telemetry signal is used to transmit information about the digital signal, such as its error rate (cf column 4, lines 12, 13). But if the digital signal were amplified optically there would be no such straightforward way of determining its error rate. The skilled person cannot be expected to consider seriously modifications which disturb important functions of the prior art.

6. *Inventive step, starting out from E10*

E10 is nearer to the invention in that the transmission line is an optical fibre but otherwise similar to E11. In this system there are also connections between the data signal and the service signal: as shown in Figure 4 and described at page 295, the bit error rate of the data signal is evaluated and indicated in a block of the service signal. Thus, for the same reasons as before, it is not clear why the skilled person should add an optical amplifier to this configuration, or substitute one for the regenerator. Furthermore, since E10 does not concern wavelength division multiplexing the skilled person would first have to think of transmitting the service signals at a wavelength substantially different from that of the data signal, then realise that both optical signals could not be amplified by the same optical amplifier, and finally turn back to the original electrical amplification or regeneration of the service signal but **not** of the digital signal. It can be seen that although the steps taken may appear small, they are interconnected. The invention is therefore not merely

an aggregation of known features. In the Board's opinion the above sequence of steps could only be arrived at with hindsight.

7. It follows that the subject-matter of claim 1 involves an inventive step. The patent should thus be maintained as amended in the opposition appeal proceedings.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent as requested by the respondent (see point VII above).

The Registrar: The Chairman:

M. Kiehl S. Steinbrener