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Datasheet for the decision of 11 January 2017

Case Number: T 0882/12 - 3.5.03

Application Number: 00306976.2

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Language of the proceedings: EN

Title of invention:
Submarine communications system and landing-stage therefor

Applicant:
ALCATEL LUCENT

Headword:
Submarine cable landing-stage/ALCATEL LUCENT

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

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European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 0882/12 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 11 January 2017

Appellant: (Applicant)	ALCATEL LUCENT 148/152 route de la Reine 92100 Boulogne-Billancourt (FR)
Representative:	Shamsaei Far, Hassan Alcatel-Lucent International 148/152 route de la Reine 92100 Boulogne-Billancourt (FR)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 28 November 2011 refusing European patent application No. 00306976.2 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	F. van der Voort
Members:	B. Noll
	O. Loizou

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division refusing European application No. 00306976.2 (publication No. EP 1 077 541 A) on the ground that the subject-matter of claims 1 of a main request and an auxiliary request lacked inventive step (Articles 52(1) and 56 EPC).

II. With the statement of grounds, the appellant filed sets of claims of first and second auxiliary requests. Oral proceedings were conditionally requested.

III. In a communication pursuant to Article 15(1) RPBA the board gave a preliminary opinion on the case, in particular as regards inventive step of the subject-matter of claim 1 of each request. The following documents referred to in this communication are relevant for the present decision:

D2: US 5,526,157 A; and

D4: US 5,559,622 A.

IV. With a letter dated 9 December 2016, the appellant submitted further arguments in support of the main request and the first auxiliary request and withdrew the second auxiliary request. Further, the appellant informed the board that it would not be attending the oral proceedings.

V. Oral proceedings were held on 11 January 2017 in the absence of the appellant.

The appellant requested in writing that the decision under appeal be set aside and that a patent be granted

on the basis of a main request, which includes claim 1 as filed with the letter dated 5 October 2011 and claims 2 to 11 as originally filed, or, in the alternative, on the basis of an auxiliary request, filed with the statement of grounds of appeal as the "first auxiliary request".

After deliberation, the chairman announced the board's decision.

VI. Claim 1 of the main request reads as follows:

"A landing-stage (4,4') for a submarine optical communications system, characterized by comprising a submerged branching unit (5) and an onshore submarine line terminal endstation (8), wherein the branching unit is capable of operatively coupling a submarine optical cable (9) to at least two partially submerged optical cables (6,7) said at least two partially submerged optical cables (6,7) being spaced apart (x) from each other, wherein the at least two partially submerged optical cables are located between said branching unit and said submarine line terminal endstation."

VII. Claim 1 of the first auxiliary request differs from claim 1 of the main request in that the wording "comprising a submerged branching unit (5) and an onshore submarine line terminal endstation (8)" has been replaced with
"comprising a submerged branching unit (5), an onshore submarine line terminal endstation (8), and at least two partially submerged optical cables (6,7)" and in that "coupling ... to at least two partially ..." has been replaced with "coupling ... to the at least two partially ..." (underlining by the board).

Reasons for the Decision

1. *Claim 1 of the main request - inventive step (Articles 52(1) and 56 EPC)*

1.1 The board will hereinafter interpret the claim narrowly for the purpose of assessing inventive step. More specifically, "the branching unit is capable of operatively coupling a submarine optical cable (9) to at least two partially submerged optical cables (6,7)" will be understood as meaning that the submarine optical cable and the at least two partially submerged optical cables are operatively coupled by the branching unit, and "wherein the at least two partially submerged optical cables are located between said branching unit and said submarine line terminal endstation" will be understood as implying that the branching unit and the submarine line terminal endstation are coupled by means of the at least two partially submerged optical cables. This is also in line with the appellant's interpretation, see point 1.6 below.

1.2 The board considers D2 to be the most relevant prior art for assessing inventive step of the subject-matter of claim 1. D2 discloses an optical submarine cable system for use in a long-distance communications system (cf. abstract, col. 2, lines 17 to 23, and Fig. 1). The system includes a terminal station 22 which is connected by means of a first section of an optical cable 11 to a branching joint box 51 (cf. right-hand part of optical cable 11 in Fig. 4). It is implicit that this section of the optical cable 11 is partially submerged, since it runs below the sea level and terminates at the terminal station 22 which is implicitly placed onshore (cf. col. 2, lines 17 to 23,

and Figs 1 and 8). Accordingly, using the language of claim 1, the terminal station 22 is an onshore submarine line terminal endstation which, together with the optical cable 11 connected to it, constitutes a landing-stage for a submarine optical communications system. D2 further discloses that the submerged branching unit, i.e. branching joint box 51, operatively couples a submarine optical cable (i.e. the left-hand part of optical cable 11 in Fig. 4) to the above-mentioned first section of the partially submerged optical cable 11 and to a further submerged optical cable 43. As shown in Fig. 4, the further optical cable 43 is spaced apart from the first section of the partially submerged optical cable 11, since the cables run from the branching joint box 51 in different directions. Further, the optical cables each include optical fibers, cf. Fig. 2.

1.3 The subject-matter of claim 1 thus differs from the landing stage disclosed in D2 in that:
- the further submerged optical cable is partially submerged; and
- the branching unit also couples the further partially submerged optical cable to the submarine line terminal endstation.

1.4 By coupling an additional partially submerged optical cable between the branching unit and the terminal endstation, a connection redundancy is provided such that, if one of the cables is damaged and the other cable remains intact, the communications system continues to function. As set out in paragraph [0003] of the application in suit (reference is made to the application as published), damage to submarine cables usually occurs at the landing-stage of the communications system, where shallow water along the

shoreline increases the chance of interference and damage by e.g. nets or anchors.

Starting out from D2, the technical problem underlying the subject-matter of claim 1 may therefore be formulated as reducing the risk of the communications system becoming inoperational due to damage to the section of the optical cable of the optical submarine cable system in shallow water.

The formulation of this technical problem does not contribute to inventive step, since it was well-known at the priority date, as a matter of practical experience, that damage to submarine cables usually occurred along the shoreline, i.e. in shallow water, and since aiming at reliable, i.e. uninterrupted, operation of a communications system was a common goal for a person skilled in the art.

1.5 The skilled person seeking a solution for this technical problem would consider D4, since this document discloses measures for ensuring continued transmission service in a fiber optic transmission system even if the transmission of optical signals is interrupted due to a fault in the optical fiber.

More specifically, D4 (cf. col. 1, lines 8 to 17) discloses that, in order to provide a more trouble-free light waveguide connection between two points in a telecommunication system, a double light waveguide connection, i.e. a light waveguide connection having two separate fibers, is provided. Given an interruption in the signal transmission over one fiber, a switch is undertaken to the other fiber that is then used for further signal transmission in place of the previously used fiber. For such a switchover (alternate circuit)

between the two fibers of a double light waveguide connection between two nodes, the optical signal may be split into two fibers (working fiber and redundant fiber) at the node of the transmitting side, these two fibers being combined at the node of the receiving side by an optical switch means via which the working fiber is connected to the node of the receiving side during normal operation. Given a break in the working fiber, the switch means switches automatically due to the outage of the transmitted light, so that the redundant fiber instead of the working fiber is now connected to the node of the receiving side. As a result of performing the switchover at the receiving side, the interruption time can be kept short. The figure of D4 illustrates a transmitting node KS and a receiving node KE which are coupled for providing the redundancy by means of a working fiber Fa and a separate, redundant fiber Fr, together with a splitter S and optical switches Sa, Sr and U.

D4 would therefore lead the skilled person to provide, for the same purpose, cable redundancy in the system of D2 by providing the system with a redundant optical cable between the branching node, i.e. branching joint box 51, and the terminal station 22 and by providing an optical switch, such as the one shown at node KS in the figure of D4, in order to operatively couple a fiber of the left-hand part of the partially submerged optical cable 11 in Fig. 4 of D2 to either the right-hand part of optical cable 11 or, if interrupted due to cable damage, to the redundant optical cable extending between the branching unit and the terminal unit 22.

Further, since optical cable 43 in Fig. 4 of D2 is a redundant optical cable which is not actually used (see D2, col. 3, lines 3 to 6), it would be obvious to use

this cable in order to provide the desired cable redundancy, resulting in this optical cable being used as a further partially submerged optical cable coupled by the branching unit to the submarine line terminal endstation.

Consequently, the skilled person starting out from D2, taking into account the teaching of D4 and using his common general knowledge would arrive at the subject-matter of claim 1 without the exercise of inventive skill.

1.6 The appellant argued in writing as follows:

(a) The skilled person would not have started out from D2 as closest prior art, since this document related to system expansion and simplification of maintenance and operation of the system, and therefore addressed a problem different from that underlying the application in suit.

(b) The skilled person faced with the problem defined above would not have considered D4, since the optical fiber and the splitter S described in D4 were not suitable for use in a submarine branching unit. Further, D4 did not disclose the distinguishing features, i.e. a submerged branching unit, and at least two partially submerged optical cables spaced apart from each other, wherein the at least two partially submerged optical cables are located between said branching unit and said submarine line terminal endstation.

(c) It would not have been obvious to the skilled person to provide two optical cables spaced apart and both terminating at one and the same landing-stage,

since none of the available prior art showed a submarine branching unit coupled to the same landing-stage by two optical cables. A skilled person would only consider a branching unit for use in branching the traffic from a trunk cable between two stations to a third station.

(d) The skilled person would be taught by D4 to install a double waveguide connection, which was different from using two optical cables. Further, installing two cables only at those portions of the optical submarine cable system which were exposed to a realistic risk of being damaged by mechanical impact was neither taught by the available prior art nor part of common general knowledge.

1.7 The board is not convinced by these arguments for the following reasons:

Re (a): For the purpose of assessing inventive step using the problem-and-solution approach, it is not required that the closest prior art solves the objective technical problem. Rather, any document may serve as starting prior art, usually one which relates to the same technical field and has the same or a similar purpose. This is the case here. In D2, the optical fiber transmission cables are connected to a branching joint box in order to facilitate the processing of a fault in the optical submarine cable system (cf. column 1, lines 27 to 47). The purpose of the system of D2 is therefore essentially the same as that of the claimed landing-stage of the application in suit, namely maintaining system capacity in case of a cable fault. Therefore, D2 is a suitable starting point for assessing inventive step.

Re (b): There is no indication in D4 that the optical fiber and the optical splitter are not suitable for use in submarine cable components or are different from a conventional optical fiber and optical components in terms of their technical properties. Since a submarine optical fiber cable conventionally consists of one or more conventional optical fibers and additional optical components encased in a seawater-resistant cable sheathing, thereby hermetically encapsulating the fibers to render them resistant to the seawater environment, the optical characteristics of an optical fiber may be considered independently from the fact that the fiber is embedded in an optical submarine cable.

Re (c) and (d): The board does not see any reason which would prevent the skilled person from applying the fiber redundancy taught by D4 to the optical submarine cable system disclosed in D2. The optical cables disclosed in D2 are each an arrangement of one or more optical fibers embedded in an appropriate mechanical casing, to make them suitable for use in a submarine environment. The fact that D4 does not explicitly mention a submarine optical cable, a submerged branching unit, and partially submerged optical cables is not relevant to the redundancy concept taught by D4. The skilled person would therefore apply the redundancy taught by D4 for the same purpose in a fiber transmission system having fibers included in an optical submarine cable, it being evident that mechanical damage to the optical submarine cable, which would result in an interruption of the communication, implies damage to the fibers inside the cable.

1.8 In view of the above, the board concludes that the subject-matter of claim 1 lacks inventive step

(Articles 52(1) and 56 EPC).

1.9 The main request is therefore not allowable.

2. *Claim 1 of the auxiliary request - inventive step (Articles 52(1) and 56 EPC)*

2.1 The considerations set out at point 1 above equally apply to claim 1 of the auxiliary request, since the amendments (see point VII above) were already taken into account in the examination of claim 1 of the main request (see point 1.1 above).

2.2 The subject-matter of claim 1 of the auxiliary request thus lacks inventive step for the same reasons as that of claim 1 of the main request.

2.3 The auxiliary request is therefore not allowable.

3. There being no allowable request, it follows that the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Rauh F. van der Voort

Decision electronically authenticated