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**Datasheet for the decision
of 12 February 2020**

Case Number: T 3003/18 - 3.4.02

Application Number: 14166143.9

Publication Number: 2772778

IPC: G02B6/38

Language of the proceedings: EN

Title of invention:

Fiber optic plug

Patent Proprietor:

Corning Optical Communications LLC

Opponents:

Meyer, Claudia
Electrosón Telecomunicación, S.A.
Huawei Technologies Co., Ltd.

Relevant legal provisions:

EPC Art. 52(1), 54(1), 56, 76(1), 83, 84, 101(3), 123(2)
EPC R. 42(1)(c), 80
RPBA Art. 13(1)

Keyword:

Admission of amended request filed during oral proceedings
(yes)

Added subject-matter (no)

Amendments - Clarity (yes)

Sufficiency of disclosure (yes)

Compliance of amendments to the description with Rule 80,
under consideration of Article 101(3) EPC (yes)

Novelty and inventive step (amended claims, yes)

Decisions cited:

G 0007/93, T 0783/05, T 2187/09, T 1888/12, T 1196/15



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Case Number: T 3003/18 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 12 February 2020

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
22 October 2018 concerning maintenance of the
European Patent No. 2772778 in amended form.**

Composition of the Board:

Chairman R. Bekkering
Members: F. J. Narganes-Quijano
 B. Müller

Summary of Facts and Submissions

- I. The patent proprietor, opponent 2 and opponent 3 each lodged an appeal against the interlocutory decision of the opposition division finding European patent No. 2772778 as amended according to the then second auxiliary request to meet the requirements of the EPC.

The patent was based on the European patent application No. 14166143.9 filed as a divisional of the earlier patent application No. 10010485.0, which in turn was filed as a divisional application of the earlier patent application No. 07001238.0, which in turn was filed as a divisional application of the earlier patent application No. 02795494.0.

- II. The oppositions filed by opponent 1, opponent 2 and opponent 3 against the patent as a whole were based on the grounds for opposition of added subject-matter in respect of the application as originally filed and of the earlier applications as filed (Article 100(c) EPC), insufficiency of disclosure (Article 100(b) EPC), and lack of novelty and of inventive step (Article 100(a) together with Articles 52(1), 54(1) and 56 EPC).

Among the documents considered during the first-instance opposition proceedings, the parties have referred *inter alia* to the following documents during the appeal proceedings:

E1: US 6234683 B

E2: EP 0949522 A

E4: US 6287016 B

E17: "A military six fiber hermaphroditic connector", J. H. Woods *et al.*; Military

Applications of Fiber Optics, 1994; pages 33 to 37

E28: JP 11231168 A, together with document E28T (machine English translation of document E28)

E29: US 4699458 A

A1: "Understanding Fiber Optics", J. Hecht; Prentice Hall, 3rd edition, 1999; two bibliographic pages and chapter 13 (pages 251 to 270)

A2: "Fiber Optics Standard dictionary", M. H. Weik; Chapman & Hall, 3rd edition 1997; two bibliographic pages and pages 333, 342, 394, 434 and 760

A11: "Fiber-Optic Communications Technology", D. K. Mynbaev *et al.*; Prentice Hall; pages 258 to 266; together with documents A11a (four bibliographic pages) and A11b (bibliographic extracts from *www.biblio.com* and *www.waterstones.com*)

A12: PowerPoint presentation, filed by the patent proprietor with the letter dated 29 March 2018.

III. In its decision the opposition division held *inter alia* that

- the subject-matter of claim 1 of the patent as granted (then main request) and of the first auxiliary request then on file was not new over document E29, and
- the patent as amended according to the second auxiliary request then on file complied with the requirements of Articles 123(2), 76(1), 83 and 84 EPC, and the corresponding claimed subject-matter was new and involved an inventive step, in particular over documents E1, E2, E28 and E29.

IV. Oral proceedings before the board were held on 12 February 2020 in the absence of opponent 1 (respondent).

During the oral proceedings the patent proprietor filed, among other documents, claims 1 to 3 of a seventh auxiliary request, and pages 3 and 4 of the description marked "18:12".

The patent proprietor requested that the decision under appeal be set aside and the patent be maintained in amended form on the basis of

- the claims of the sole request filed as seventh auxiliary request during the oral proceedings of 12 February 2020,

- description pages 2 and 5 to 8 of the patent specification and pages 3 and 4 marked "18:12" and filed during the oral proceedings of 12 February 2020, and

- figures 1 to 12 of the patent specification.

Opponent 2 and opponent 3 requested that the decision under appeal be set aside and that the European patent No. 2772778 be revoked.

The chairman noted that opponent 1 had filed no request and made no submission during the appeal proceedings.

At the end of the oral proceedings the chairman announced the decision of the board.

V. Claim 1 of the sole request of the patent proprietor reads as follows:

"A fiber optic plug (10) comprising:

a fiber optic connector (16) comprising a connector housing (18) and a plug ferrule (20) at least partially disposed within the connector housing (18) and capable of being mounted upon an end portion of at least one optical fiber, wherein the plug ferrule (20) is mounted within the connector housing (18) such that a front face (26) of the plug ferrule (20) extends beyond a forward end (24) of the connector housing (18); and

a plug body (14) extending lengthwise between a first end (48) and a second end (50) and having a shroud (56) proximate the first end (48) thereof, wherein the first end (48) is opposed from the second end (50), the shroud (56) defining at least one opening (58),

wherein the fiber optic connector (16) is an MTRJ connector, SC connector, or LC connector,

wherein the first end (48) of the plug body (14) extends beyond the front face (26) of the plug ferrule (20) in order to protect the front face (26) of the plug ferrule (20) from damage during handling, installation and the like,

wherein the plug body (14) includes a shaft (52, 54) and a collar (90) disposed upon the shaft (54, 52) such that travel of the collar (90) in the lengthwise direction is limited even though rotation of the collar (90) about a longitudinal axis defined by the shaft (52, 54) is permitted;

wherein the fiber optic connector (16) is disposed within the plug body (14) such that the forward end (24) of the connector housing (18) as well as the front face (26) of the plug ferrule (20) are exposed and accessible within the shroud (56) via the first end (48) of the plug body (14), and in that the shroud (56) defines at least one opening (58) that extends lengthwise from at least a medial portion of the shroud (56) to the first end (48) of the plug body (14) so

that the forward end (24) of the connector housing (18) and the front face (26) of the plug ferrule (20) are also exposed and accessible through the at least one opening (58)."

The sole request of the appellant also includes dependent claims 2 and 3 referring back to claim 1.

Reasons for the Decision

1. The appeals filed by the patent proprietor, opponent 2 and opponent 3 are admissible.

2. *Admission of amendments - Article 13(1) RPBA 2007*
 - 2.1 Claim 1 of the present sole request of the patent proprietor was submitted for the first time at the start of the oral proceedings held before the board as then seventh auxiliary request. Claim 1 consists, in substance, of claim 1 as granted amended by incorporation of the two following further features:
 - A) "the fiber optic connector (16) is an MTRJ connector, SC connector, or LC connector", and
 - B) "the plug body (14) includes a shaft (52, 54) and a collar (90) disposed upon the shaft (54, 52) such that travel of the collar (90) in the lengthwise direction is limited even though rotation of the collar (90) about a longitudinal axis defined by the shaft (52, 54) is permitted".

Feature B) corresponds to the feature defined in dependent claim 2 as granted, and feature A) is taken

from the description. Dependent claims 2 and 3 of the present request correspond to dependent claims 3 and 4 as granted, respectively.

In addition, pages 3 and 4 of the description of the present request constitute an amended version of pages 3 and 4 of the patent specification.

2.2 Opponent 3 and opponent 2 requested that the present request not be admitted into the proceedings because it was filed very late and could and should have been filed at an earlier stage, the amended claim 1 specified a partial list of connector variants only disclosed in the description, and the amendments to claim 1 and to the description raised new issues. In addition, there was no special circumstance that would justify the admission of the amended request.

It is noted, however, that

- the combination of claim 1 as granted with feature A) corresponds in substance to claim 1 of the second auxiliary request underlying the decision under appeal after deletion of two of the connector variants (the SC-DC and the MTP connectors) defined in the claim, and

- the combination of claim 1 as granted with feature B) corresponds in substance to claim 1 of the first auxiliary request underlying the decision under appeal.

Therefore, the subject-matter of both the combination of claim 1 as granted with feature A) and the combination of claim 1 as granted with feature B) have already been addressed by the parties during the first-instance opposition proceedings. Furthermore, in its reply to the statements of grounds of appeal of

opponent 2 and opponent 3 the patent proprietor had already requested consideration of auxiliary requests directed to the combination of the amendments relating to the connector variants (cf. feature A)) and to the arrangement of the shaft and the collar (cf. feature B)), and subsequently the patent proprietor filed, in reply to the communication annexed to the summons to oral proceedings, auxiliary requests directed to such combinations.

In addition,

- the variant relating to the MTP connector was deleted in reaction to the preliminary opinion expressed by the board in the communication annexed to the summons in respect of connectors identified in claim 1 by reference to a trademark, the mentioned deletion being already present in the third auxiliary request previously filed by the patent proprietor in reply to the statements of grounds of appeal of opponent 2 and of opponent 3, and

- the variant relating to the SC-DC connector was deleted in reaction to the argument submitted for the first time by opponent 2 in the letter of reply to the mentioned communication and according to which, in addition to the MTP connector, the SC-DC connector was also defined by a trademark.

In view of all these considerations, the board is of the opinion that the combination of claim 1 as granted with the arrangement relating to the shaft and the collar (cf. feature B)) and with the connector variants after deletion of two of them (cf. feature A)) was not surprising in the circumstances of the case, did not add complexity to the case, and did not raise new issues, at least not new issues that could not be dealt with by the parties and the board during the oral

proceedings. Similar considerations apply to the amendments of the description because they are only directed to the adaption of its content to the amended claims (see point 4 below). For these reasons, during the oral proceedings the board, in the exercise of its discretion under Article 13 (1) RPBA 2007 (see Article 25 (1) and (3) RPBA 2020 (OJ EPO 2019, A63)), decided to admit the request of the patent proprietor into the proceedings.

- 2.3 It is also noted that opponent 2 and opponent 3 requested in respect of previous requests considered during the appeal proceedings that the case be remitted to the opposition division for further prosecution in the event that the requests were admitted into the proceedings, but that during the oral proceedings this request was not repeated in respect of the present request. In any case, in view of the fact that the amended features of claim 1 had already been addressed in substance during the first-instance proceedings (see point 2.2 above, third paragraph), and for reasons of procedural economy - and also under consideration of the accelerated processing of the appeals following the request for accelerated prosecution submitted by opponent 3 -, the board exercised its discretion under Article 111(1) EPC in not remitting the case for further prosecution on the basis of the present request.

3. *Claims - Articles 123(2), 76(1), 83 and 84 EPC*

During the oral proceedings opponent 2 and opponent 3 did not raise objections of added subject-matter, insufficiency of disclosure or lack of clarity in respect of the amended claims of the present request of

the patent proprietor, and the board is satisfied that the amended claims comply with the requirements of Articles 123(2), 76(1), 83 and 84 EPC. In particular, as regards the claims of the present request, the objections of added subject-matter, insufficiency of disclosure and lack of clarity raised by the opponents during the appeal proceedings in respect of previous requests - including the objections raised under Articles 100(b) and (c) in respect of the claims of the patent as granted - are not persuasive for the following reasons:

3.1 Articles 123(2) and 76(1) EPC

3.1.1 In its decision the opposition division concluded that none of the objections of added subject-matter initially raised by the opponents under Article 100(c) EPC - by reference to both the application as originally filed and the earlier applications as filed - in respect of claim 1 of the patent was convincing. During the appeal proceedings opponent 2 and opponent 3 contested the opposition division's conclusion in respect of

- the first end of the plug body and the forward end of the connector housing of the fiber optic plug of claim 1 being "exposed [...] through the at least one opening" of the shroud,

- the omission in claim 1 that the claimed "accessible" arrangement through the at least one opening was "for cleaning and the like", and

- the subject-matter of claim 1 not being limited to an MTP connector.

The first of these objections is not found convincing by the board for the reasons already given by the opposition division in the decision under appeal. More

particularly, the terms "exposed" and "accessible" in the passage on page 12, lines 29 to 31 of the description of the application as originally filed and of the earlier applications as filed ("... are exposed and accessible [...] via the first end 48 of the plug body") [*emphasis added*] are, in their context, not independent of each other, but they describe the exposed, accessible configuration of the structural elements under consideration with respect to the first end of the plug body. In the board's opinion the skilled person would not interpret the expression "In order to permit additional access [via the opening(s)]" [*emphasis added*] in the subsequent passage on page 12, line 35 to page 13, line 1, of the description of the application as originally filed and of the earlier applications as filed in isolation, but, in the technical context of the corresponding disclosure, as referring to the concept of accessibility defined in the previous passage on page 12, lines 29 to 31 mentioned above and involving the exposed, accessible configuration of the structural elements. This interpretation is, in addition, supported by the passages of the description on page 12, line 35, to page 13, line 1, and page 13, lines 18 to 20, according to which the "additional access" to these structural elements is "for cleaning and the like", thus implying a degree of exposure of the structural elements determined by the opening(s), and also supported by Fig. 1, 3 and 4 in which the mentioned structural elements are not only exposed and accessible via the first end 48 of the plug body and accessible through the opening 58 of the shroud, but also exposed through this opening.

As regards the second objection, the board notes that the passage in the sentence bridging pages 12 and 13 of

the application as originally filed and of the divisional applications as filed ("In order to permit additional access [...] for cleaning and the like [...]") discloses, in its context, only a possible intended use of the at least one opening of the shroud, without however being restricted to it, because the at least one opening of the shroud is also defined in the description in more general terms, without it being restricted to a particular use (see page 4, line 37 to page 5, line 8, and page 13, lines 13 to 17), and also defined for purposes different than for cleaning and the like (see page 13, lines 18 to 22). Consequently, the fact that claim 1 as granted does not specify that the opening of the shroud permits access to the structural elements under consideration "for cleaning and the like" does not, in the board's view, constitute an unallowable intermediate generalization.

As regards the third of the mentioned objections, the board notes that the passage on page 10, lines 31 to 37, of the description of the application as originally filed and of the earlier applications as filed specifies that the embodiment of the fiber optic plug of the invention is disclosed in the subsequent passages by reference to a MTP connector "by way of example, but not of limitation", and that the fiber optic plug "may include a variety of fiber optic connectors including", among others, "MTRJ connectors, [...] SC connectors, LC connectors". The skilled reader would therefore understand that the features of the embodiment other than the specific features of the same relating to the fact that the connector is of the MTP type would also be applicable to other types of connectors, and in particular to the connectors specified in the mentioned passage, see for instance page 7, lines 28 to 31, and page 15, lines 12 to 16, of

the description of the application as originally filed and of the earlier applications as filed.

- 3.1.2 During the oral proceedings the combination of claim 1 as granted with feature B) and with feature A) including additional connector variants was objected to by opponent 2 and opponent 3 in respect of previous requests considered during the oral proceedings on the ground that it constituted an unallowable intermediate generalization of the content of the application as originally filed (Article 123(2) EPC). In the board's opinion this objection, as far as applicable to claim 1 of the present request, is not persuasive because claim 1 as granted is based on claim 1 as originally filed, feature B) consists of the features of dependent claim 2 as granted which are identical to those of dependent claim 3 as originally filed, and feature A) is based on the passage on page 10, lines 33 to 37, of the description of the application as originally filed according to which "the fiber optic plug may include a variety of fiber optic connectors including MTRJ connectors, SC-DC connectors, Unicam™ connectors, SC connectors, LC connectors, and the like". In particular, the submissions of opponent 2 and opponent 3 according to which the collar was disclosed in the paragraph bridging pages 18 and 19 of the description as originally filed as being "designed to threadably engage the fiber optic receptacle" and the omission of this feature in claim 1 (cf. feature B)) would constitute an unallowable intermediate generalization under Article 123(2) EPC is not persuasive because dependent claim 2 as originally filed defines the essential features of the arrangement disclosed in the mentioned paragraph and the mentioned feature is absent in dependent claim 2 as originally filed.

The further submission of opponent 2 and opponent 3 according to which the mentioned passage bridging pages 18 and 19 of the description as originally filed referred to the embodiment disclosed with reference to Fig. 4 and this embodiment was specifically tailored to the MTP connector, and not to other connector types as now claimed, is not found convincing by the board either because, as submitted by the patent proprietor, according to the passage on page 10, lines 33 to 37, of the description as originally filed the fiber optic plug may include, among other connectors, the connectors of the claimed types and the mentioned embodiment is disclosed by reference to an MTP connector "by way of example, but not of limitation". In addition, the board does not see in what respect the disclosure of the description relating to the shaft and the collar of the plug body would be specifically tailored to a connector of the MTP type because, while the claimed features of the shaft and the collar relate to the outer section of the plug body, only the structural features of the inner section of the plug body need to be adapted to the specific connector type disposed within the plug body (see page 15, lines 12 to 16, of the description of the application as originally filed).

Therefore, the combination of claim 1 as granted with features A) and B) does not go beyond the content of the application as originally filed (Article 123(2) EPC). For similar reasons (see in particular claims 1 and 18 and the passage on page 10, lines 33 to 37, of the description of the earlier application 02795494.0 as filed, and the passages on page 8, lines 14 to 16, and page 10, lines 33 to 37, of the description of the earlier applications 070012380.0 and 10010485.0 as

filed), the same conclusion applies in respect of the earlier applications as filed (Article 76(1) EPC).

3.2 Articles 83 and 84 EPC

3.2.1 In respect of previous requests opponent 2 and opponent 3 submitted that the definition of the claimed subject-matter by reference to connectors designated by standards or norms was - contrary to the opposition division's view - not clear (Article 84 EPC), among other reasons because the corresponding standards or norms included different versions and changed over time and the structural and functional features of the claimed connectors were not clear. Opponent 3 referred in this respect to the case law, and in particular to decisions T 1888/12 (point 2.1 of the reasons) and T 0783/05 (point 2 of the reasons).

The patent proprietor, by reference to decisions T 2187/09 (point 2 of the reasons) and T 1196/15 (point 5.1 of the reasons), submitted that references to standards in claims were not generally unclear *per se*, and that what should be considered in the present case for the issue of clarity were the features of the standard as they related to the claimed invention.

The board considers that the clarity of a claim specifying a norm or standard depends on the circumstances of the case, and in particular on the claimed subject-matter, and the board adheres in this respect to the view expressed by the patent proprietor. In the case under consideration, the MTRJ connector specified in claim 1 designates a well-known standardized family of connectors having, on the one hand, specific features that may differ among the connectors of the family and that may change over time

according to different specific versions of the corresponding standard or norm and, on the other hand, a series of common (or, as noted by the opposition division, generic) features - in particular, the features relating to the connector housing with a ferrule extending therefrom and constituting, at least to a predetermined extent, aligning and coupling means - that ensure a predetermined degree of compatibility and interchangeability between the different connectors of the same family. Moreover, these connectors are commonly and generally designated "MTRJ connectors" in textbooks, reference books and the like (see for instance document A1, page 267, first paragraph; document A11, page 264, second paragraph; and document A12, page 8), without reference to any particular version of the corresponding standard or norm. In addition, in the present case - and contrary to other cases, such as those mentioned by opponent 3 by reference to the case law - the features of the MTRJ connector relevant in the technical context of claim 1 are not the specific, but the common features mentioned above, and for this reason in the opinion of the board the person skilled in the technical field under consideration would understand what is meant in the claimed context by the optic connector being an "MTRJ connector".

The same considerations apply to the SC and the LC connectors defined in claim 1 (see document A1, page 263, penultimate paragraph, and Fig. 13.9; document A11, page 263, section "SC Connector"; and document A12, pages 9 and 10).

Opponent 3 also submitted that the claimed connectors included additional means, such as a latching mechanism in the case of MTRJ and SC connectors (document A1,

page 263, penultimate paragraph; and document A11, page 263, section "SC connector", and page 264, section "MT-RJ connector"), and that it would be unclear for the skilled person implementing the claimed invention whether these additional means would also be integrated within the plug body.

However, according to claim 1 the MTRJ, SC or LC connector "is disposed within the plug body", and the skilled person would understand that what constitutes the connector itself would be disposed within the plug body.

- 3.2.2 In its decision the opposition division found that the objections raised under Article 100(b) EPC in respect of the patent as granted were not persuasive, and during the appeal proceedings opponent 3 maintained some of these objections in respect of previous requests considered during the appeal proceedings.

In the board's view these objections are not persuasive in respect of the invention defined in the claims of the present request (Article 83 EPC) essentially for the reasons already given by the opposition division in the decision under appeal. It is noted that the mentioned objections concern the formulation of claim 1 as granted and of the description and possible contradictions or incoherences between the formulation of claim 1 as granted and that of the description, that these objections rather relate to Article 84 EPC, that Article 84 EPC is not a ground for opposition, and that in any case the mentioned objections do not prejudice sufficiency of disclosure within the meaning of Article 83 EPC. In particular, when implementing the claimed invention, the skilled person would be in a position to resolve any possible ambiguity in the formulation of

the claimed features (in particular, on whether the features "a plug body having [...] a shroud (56) proximate the first end (48) [of the plug body]" and "the shroud (56) defines at least one opening (58) that extends lengthwise [...] to the first end (48) of the plug body" imply or not that the shroud includes the first end of the plug body and/or that the shroud can define an opening that extends to the first end of the plug body) in view of the whole disclosure of the patent specification, see in particular the shroud 56 and the first end 48 of the plug body 14 represented in Fig. 1 and 3 to 5, together with the corresponding description in the patent specification.

During the appeal proceedings opponent 2 and opponent 3 also objected that the disclosure of the invention did not contain sufficient information to enable the skilled person to carry out the invention within the meaning of Article 83 EPC in respect of the different connector variants. However, the patent specification contains a detailed disclosure of the claimed invention for a MTP connector "by way of example" (paragraph [0016], first three sentences), and the description makes clear that the same disclosure is also applicable to the remaining types of connectors upon consideration of their specific characteristics (patent specification, column 9, lines 22 to 28), and in particular of the structural means of the connectors. The board is of the opinion that the skilled person in the technical field under consideration would be in a position, without undue burden and on the basis of common general knowledge, to apply and, if necessary, to adapt the detailed disclosure relating to the fiber optic plug comprising a stand-alone connector of the MTP type and a plug body to the case in which the connector is replaced by another stand-alone connector

of the claimed MTRJ, SC or LC type. In addition, the claimed connector variants are sufficiently identified for the purposes of enabling the invention to be carried out by the skilled person for reasons analogous to those already given in point 3.2.1 above.

3.2.3 In view of all these considerations, the board concludes that the claims are clear (Article 84 EPC) and that the claimed invention is sufficiently disclosed within the meaning of Article 83 EPC.

4. *Description - Rule 80 and Articles 123(2) and 76(1) EPC*

4.1 Amended pages 3 and 4 of the description marked "18:12" correspond to pages 3 and 4 of the description of the patent specification amended as follows:

i) the expressions "according to an embodiment of this invention", "of this invention", and "according to one embodiment of this invention" in the passages in column [0012] and [0014] referring to Fig. 1, 2 and 9 have been deleted; and

ii) the passage in paragraph [0016] reading "[...] depending upon the type of fiber optic connector. Although the fiber optic plug may include a variety of fiber optic connectors including MTRJ connectors, SC-DC connectors, Unicam™ connectors, SC connectors, LC connectors, and the like, the fiber optic plug 10 of the illustrated embodiment is shown to include an MTP connector by way of example, but not of limitation" has been amended to read "[...] depending upon the type of fiber optic connector, the fiber optic connectors being MTRJ connectors, SC connectors, or LC connectors. The fiber optic plug 10 of the illustrated embodiment is shown to include an MTP connector by way of example,

but falling outside of the scope of the claimed invention."

- 4.2 During the oral proceedings opponent 3 submitted that these amendments to the description of the patent as granted were not occasioned by a ground for opposition under Article 100 EPC, and that for this reason the amendments were contrary to Rule 80 EPC.

The board, first, notes that, when compared with claim 1 as granted, present claim 1 has been amended to require that the fiber optic connector of the claimed fiber optic plug "is an MTRJ connector, SC connector, or LC connector", and that this amendment was occasioned by the grounds for opposition of lack of novelty and of inventive step raised under Article 100(a) EPC by the opponents during the proceedings. Furthermore, according to Article 101 (3) EPC the amendments to the patent as granted shall meet the requirements of the EPC, and in particular the requirements of Article 84 EPC according to which the claims shall be supported by the description, together with the requirements of Rule 42 (1) (c) EPC according to which the description shall disclose the invention as claimed.

In addition, the amendments to the description mentioned in point 4.1 above make clear that only the variants relating to the use of a fiber optic connector of the MTRJ, the SC or the LC type constitute embodiments of the claimed invention, and the amendments only constitute an adaption of the description to claim 1 amended according to the present request of the patent proprietor and according to which "the fiber optic connector [...] is an MTRJ connector, SC connector, or LC connector". Therefore, the

mentioned amendments are occasioned and justified by Article 101 (3) EPC, together with the requirements of Article 84 and Rule 42(1)(c) EPC. In addition, none of the amendments go beyond what is required to meet these requirements.

Therefore, the board concludes that the amendments to the description are occasioned by a ground for opposition under Article 100 EPC, within the meaning of Rule 80 EPC, and upon further consideration of Article 101 (3) EPC and the requirements of Article 84 and Rule 42 (1) (c) EPC.

- 4.3 During the oral proceedings opponent 3 submitted that, while the passage "a variety of fiber optic connectors including [...] SC-DC connectors, [...] SC connectors, [...] and the like" in paragraph [0016] of the description of the patent specification unambiguously specified the SC-DC connectors as an alternative to, and therefore as a type of connectors distinct from, the connectors of the SC type, in the corresponding amended passage of the description ("the fiber optic connectors being MTRJ connectors, SC connectors, or LC connectors") the expression "SC connectors" could be interpreted as referring to connectors of the general SC type, and therefore as including SC-DC connectors as a specific type of SC connectors. Therefore, the deletion of the expression "SC-DC connectors" in the mentioned passage had the effect that the amended passage went beyond the application as originally filed in respect of the technical meaning of the expression "SC connectors" (Article 123(2) EPC).

However, as submitted by the patent proprietor, the SC-DC connectors constitute a further, multi-fiber development of the single-fiber SC connectors and they

constitute a type of connectors different from the SC connectors, and the technical literature consistently refers to the SC and to the SC-DC connectors as two different types of connectors (see, for instance, document A1, page 263, text in the right-hand margin of the page: "The SC is a widely used snap-in single-fiber connector."; and document A11, section "SC Connector" on page 263, and section "SC-DC™ Connector" on page 264). For these reasons, in the opinion of the board, the deletion of the expression "SC-DC connectors" in the mentioned passage of the description does not render the subsequent expression "SC connectors" ambiguous or broader to the extent of constituting added subject-matter.

4.4 In view of the above considerations, the board concludes that the description as amended according to the present request of the patent proprietor complies with Rule 80 EPC, under consideration of Article 101 (3) EPC, and also with Article 123(2) EPC - and, for similar reasons, also with Article 76(1) EPC.

5. *Novelty*

During the oral proceedings opponent 2 and opponent 3 did not raise any objection of lack of novelty in respect of claim 1 of the present request, and the board is satisfied that the subject-matter of this claim is novel over the documents of the state of the art considered by the parties during the proceedings, and in particular over documents E1, E2, E4, E17, E28 and E29. More particularly:

5.1 Document E1

5.1.1 It was undisputed by the parties that document E1 discloses a fiber optic plug (see Fig. 1, 2 and 6, together with the corresponding description) comprising a fiber optic connector (connector 40 in Fig. 1 and 2) of the LC type (column 5, lines 37 to 48) comprising a connector housing and a plug ferrule (ferrule 42) partially disposed within the connector housing and mounted therein with its front face extending beyond a forward end of the connector housing (Fig. 2), and a plug body (70, 80 and 100 in Fig. 1 and 6) having a shroud (shroud 70) proximate a first end thereof, the shroud comprising two openings (see openings between keys 71 and 73 of the shroud in Fig. 1 and 6) extending in the lengthwise direction from a medial portion of the shroud to the first end of the plug body. In addition, in the fiber optic plug of document E1 the front end of the plug body extends beyond, and protects the front face of, the plug ferrule (Fig. 1 and 6), and the front face of the plug ferrule is exposed and accessible within the shroud via the first end of the plug body and also through the two openings of the shroud (Fig. 1 and 6).

5.1.2 The fiber optic plug of document E1 also comprises a plug insert (insert 20 in Fig. 1, 4A to 4C, and 6) inserted into the housing of the plug body (Fig. 1 and 6) in such a way that the connector is inserted into the plug insert (Fig. 1) with the plug ferrule extending through an aperture (aperture 28) of the front face of the plug insert (Fig. 1 and 6). This aperture has a front seal seat (seat 32) receiving a front O-ring shaped seal (seal 39 in Fig. 1).

In its decision the opposition division held that this arrangement was such that the side openings of the shroud did not expose and provide access to the front

end of the connector housing as claimed. Opponent 2 and opponent 3 contested this view and submitted that the opening around the ferrule was not closed by the front seal 39 and therefore allowed access - in particular, for cleaning - to the front end of the connector housing with an appropriate tool. Opponent 2 also submitted that, in any case, the front seal was not disclosed as mandatory because in Fig. 17 the seal was omitted.

However, the arrangement disclosed in document E1 essentially conceals the connector housing within the space formed by the plug insert and the housing of the plug body, and in the board's opinion the round slot formed between the plug ferrule (ferrule 42) and the front seal (seal 39) positioned into the front seal seat (seat 32) of the ferrule aperture (aperture 28) of the plug insert (Fig. 1 and 6) - or, assuming that the front seal were only disclosed as optional as submitted by opponent 2, formed between the plug ferrule and the ferrule aperture (see Fig. 6) - is, as submitted by the patent proprietor, not sufficiently broad to be considered to constitute a free space through which the front end of the connector housing disposed within the plug insert would be "exposed and accessible" within the claimed meaning, i.e. exposed and accessible within the shroud via the front end of the plug body and also through the side openings of the shroud.

- 5.1.3 The board concludes that - independently of the claimed features relating to the shaft and the collar of the plug body - the subject-matter of claim 1 is new over the disclosure of document E1 at least in the claimed feature requiring that the front end of the connector housing is exposed and accessible within the shroud via

the front end of the plug body and also through the side openings of the shroud.

5.2 Document E29

5.2.1 In its statement of grounds of appeal the patent proprietor contested the admission of document E29 by the opposition division into the proceedings and requested that the opposition division's decision to admit document E29 into the proceedings be overturned. The patent proprietor submitted in particular that, contrary to the opposition division's view, document E29 was late filed and that, in addition, the content of the document was not more relevant than that of other documents considered during the first-instance proceedings.

The board first notes that document E29 was late filed in the sense that it was submitted after the opposition period, and that the opposition division considered the document to have been filed "in due time" in the sense that it was submitted about two months before the first-instance oral proceedings. In addition, in the decision under appeal the opposition division considered that the disclosure of document E29 was "highly relevant (and more relevant than other prior art)" (reasons for the decision, page 9, first paragraph), and therefore *prima facie* relevant for the issue of the patentability of the claimed invention.

The patent proprietor disputed the assessment of the content of document E29 by the opposition division, and also the opposition division's conclusion that the content of the document anticipated the subject-matter of claim 1 as granted. However, these submissions only relate to the substantive assessment of the content of

document E29 and they may be considered when reviewing the corresponding opposition division's findings, but - as submitted by opponent 2 and opponent 3 by reference to decision G 7/93 (OJ EPO 1994, 775), point 2.6 of the reasons - they do not have an impact on the procedural question of whether the opposition division exercised its discretion under Article 114(2) EPC according to the wrong principles, or without taking into account the right principles, or in an unreasonable way.

In these circumstances, the board sees no reason in the patent proprietor's submissions that would justify reversing the opposition division's decision to admit document E29 into the proceedings. For these reasons, the board rejects the request of the patent proprietor to overturn the opposition division's decision to admit document E29 into the proceedings.

- 5.2.2 Document E29 discloses a fiber optic plug (plug "A" in Fig. 1(a) and 2, together with the corresponding description, in particular column 2, lines 28 to 33) comprising a fiber optic connector comprising a connector housing (ferrule insert 3) and a plug ferrule (ferrule 2) arranged to receive an end portion of an optical fiber and partially disposed within the connector housing and mounted therein with its front face extending beyond a forward end of the connector housing (Fig. 1(a)), and a plug body (body 1) having a shroud (protective walls 7 in Fig. 1(a)) proximate a first end thereof, the shroud comprising two openings (the two openings between the protective walls 7 in Fig. 1(a) and 2) extending in the lengthwise direction to the first end of the plug body (Fig. 1(a) and column 3, lines 12 to 14). Furthermore, the plug body includes a shaft (body 1) and a collar (coupling nut 8) disposed upon the shaft (Fig. 1(a)) such that travel of the

collar in the lengthwise direction is limited even though rotation of the collar about a longitudinal axis defined by the shaft is permitted (column 3, lines 13 and 14, and column 4, lines 46 to 53, together with Fig. 1(a), see in particular the mating protrusions of the front body 1 and the coupling nut 8). In addition, in the fiber optic plug of document E29 the front end of the plug body extends beyond, and protects the front face of the plug ferrule (Fig. 1(a)), and both the forward end of the connector housing and the front face of the plug ferrule are exposed and accessible within the shroud via the first end of the plug body and also through the two openings of the shroud (Fig. 1(a) and 2).

During the proceedings the patent proprietor submitted that

- the plug "A" disclosed in document E29 with reference to Fig. 1(a) constituted itself a fiber optic connector and therefore it did not constitute a fiber optic plug as claimed, and

- the ferrule 2 and the ferrule insert 3 of the plug "A" did not constitute a fiber optic connector, at least not within the claimed meaning, because these components did not perform the functions of retention, alignment, and mechanical coupling proper to a fiber optic connector and, in addition, because the skilled person would understand that the fiber optic connector defined in claim 1 operated as a connector independently of the plug body, i.e. constituted a stand-alone connector.

In the board's view, however, the plug "A" of Fig. 1(a) of document E29 is designed for insertion into the assembly constituted by the identical plug "B" represented in Fig. 1(b) inserted into the adaptor "C"

represented in Fig. 1(c) (see column 2, lines 28 to 40). Therefore, the plug "A" constitutes itself a fiber optic plug within the meaning of claim 1.

Furthermore, as submitted by opponent 2 and opponent 3, none of the structural and functional features of claim 1 excludes the provision of the claimed fiber optic connector as being only constituted by the ferrule insert 3 and the ferrule 2 (possibly together with the coil spring 4), or the provision of the claimed connector housing as being constituted by the ferrule insert 3 of the fiber optic plug of document E29. In particular, claim 1 does not require that the connector fulfils, alone, the whole fiber retention and/or aligning and/or mechanical coupling functions (see in this respect paragraph [0018] of the patent specification), and the ferrule insert 3 and the ferrule 2 together constitute means performing, at least to some extent, the mentioned functions, and they therefore constitute, and operate as, a fiber optic connector. In addition, contrary to the patent proprietor's submissions, the fiber optic connector of document E29 constitutes a separate entity, and although the connector does not constitute a stand-alone connector, as it requires that the ferrule is pressed by the coil spring 4 supported by the washer 5 retained within the plug body for the connector to be fully operational, claim 1 does not require that the fiber optic connector is a stand-alone connector and, more particularly, it does not exclude that the claimed fiber optic connector is mechanically integrated within the plug body to the same degree as in document E29. In particular, there is no reason that would justify interpreting the expression "fiber optic connector" of claim 1 beyond its general meaning as specifically

designating a connector of the stand-alone or off-the-shelf type as submitted by the patent proprietor.

During the appeal proceedings the patent proprietor referred to several documents, and in particular to documents A1 and A2, in support of its submissions regarding the technical meaning of a fiber optic connector, but the board considers that, in view of the formulation of claim 1 and the above considerations, the disclosure of these documents does not support the restrictive interpretation of claim 1 submitted by the patent proprietor. In particular, as submitted by opponent 3, the ferrule insert 3, together with the ferrule 2 of document E29, constitute a simple fiber optic connector of the ferrule type according to the disclosure of document A1 (page 251, first paragraph, second sentence, and page 260, second and third paragraphs) and also according to the general definition of "fiber optic connector" in document A2 (page 342), and the fact that several of the documents referred to by the patent proprietor mainly disclose fiber optic connectors of the stand-alone type fulfilling, by themselves, the whole fiber retention, aligning and mechanical coupling functions is not sufficient to conclude that a fiber optic connector is necessarily of that type.

- 5.2.3 In view of the above considerations, the board is of the opinion that the fiber optic plug defined in claim 1 differs from the fiber optic plug disclosed in document E29 in that the optic fiber connector is an MTRJ, an SC connector, or an LC connector, while in document E29 the optic fiber connector is of the integrated type in the sense mentioned in point 5.2.2 above, penultimate paragraph.

5.3 Document E2 (Fig. 7, 8 and 9, together with the corresponding description), document E4 (Fig. 1 and 2, together with the corresponding description), document E17 (Fig. 3, together with the corresponding description), and document E28 (Fig. 1, 3 and 5, together with the corresponding description in document E28T) disclose optical fiber connector arrangements. However, none of documents E2, E4 and E28 disclose a rotatable collar as claimed, and document E17 does not disclose MTRJ or SC or LC connectors as claimed. Therefore, at least for these reasons, the subject-matter of claim 1 is new over each of documents E2, E4, E17 and E28.

5.4 The board concludes that the subject-matter of claim 1 is new over the prior art considered during the appeal proceedings (Articles 52(1) and 54(1) EPC). The same applies to dependent claims 2 and 3.

6. *Inventive step*

During the oral proceedings opponent 2 and opponent 3 raised objections of lack of inventive step of the subject-matter of claim 1 of the present request over document E1 and, alternatively, over document E29 as closest state of the art.

6.1 Document E1 as closest state of the art

6.1.1 The subject-matter of claim 1 is new over document E1 at least in the feature referred to in point 5.1.3 above. During the oral proceedings the parties submitted that the objective problem solved by this distinguishing feature was the provision of a better

and easier access to the front end of the connector housing, especially for the purpose of rendering easier the operation of cleaning it (see first sentence of each of paragraphs [0021] and [0022] of the patent specification).

6.1.2 According to opponent 3, the skilled person would understand that the tedious operation of cleaning the front end of the connector housing of the connector of document E1 would be simplified by removing the plug insert 20 and leaving the front end of the connector housing exposed to the outside as disclosed, for instance, in document E29. According to opponent 2, document E1 already disclosed removing the plug insert 20 (column 9, lines 43 to 57), and it would be obvious to remove the plug insert and/or to broaden the ferrule aperture for the purpose of rendering easier the operation of cleaning the connector, thus exposing the front end of the connector housing as claimed.

However, document E1 relates, as submitted by the patent proprietor, to a fiber optic plug for use in battlefield conditions the structural arrangement of which is qualified as "critical" (column 9, lines 43 to 57), and one of the functions of the plug insert of document E1 is to protect the interior of the plug body, and therefore also the front end of the connector housing, from dirt, debris and the like. In this context, the skilled person confronted with the problem of cleaning the front end of the connector housing would consider disassembling the fiber optic plug, and in particular removing the plug insert, for the purposes of cleaning the front end of the connector housing. However, in the board's opinion the skilled person would not further consider omitting the plug insert in the fiber optic plug and leaving the front

end of the connector housing exposed as claimed as this would be contrary to one of the main features of the fiber optic plug of document E1 and in particular of the plug insert, i.e. to protect the optical components and, in particular, the fiber optic connector against dirt, debris and the like. Similar considerations apply in respect of an alternative argument submitted by opponent 2 and opponent 3 according to which the skilled person would consider broadening the already existing ferrule aperture 28 (see point 5.1.2, last paragraph) in order to improve accessibility to the front end of the connector housing for cleaning, because broadening the mentioned aperture would run contrary to the idea of concealing and protecting the connector housing within the plug body by means of the plug insert.

In addition, contrary to the further submissions of opponent 3, the skilled person would not consider omitting the plug insert on the basis of a trade-off between protection against dirt and easy cleaning, because the fiber optic connector of document E1 is inserted in the plug insert which constitutes a component of the plug body itself (point 5.1.2 above, first paragraph; see also column 9, lines 43 to 57). Therefore, the skilled person would not consider omitting the plug insert, as this would impair the mechanical assemblage of the different components and render the fiber optic plug functionally inoperative.

- 6.1.3 Therefore, none of the arguments of opponent 2 and opponent 3 allows the conclusion that the fiber optic plug of claim 1 is obvious in the light of document E1 as closest state of the art.

6.2 Document E29 as closest state of the art

6.2.1 Opponent 2 and opponent 3 submitted during the oral proceedings that the technical effect of the distinguishing feature of the claimed fiber optic plug over the disclosure of document E29 (see point 5.2.3 above) resided in rendering the fiber optic plug compatible with fiber optic receptacles or adaptors according to predetermined standards that were well known in the art (document A1, page 263, penultimate paragraph together with Fig. 13.9, and page 267, first paragraph; and document A11, pages 263 and 264), and that the objective problem solved by the claimed subject-matter was to be formulated in terms of enabling compatibility or intermateability with an optic receptacle or adaptor of a known, standardized type, while maintaining the advantages of the fiber optic plug of document E29.

In addition, according to opponent 2 and opponent 3 it would be straightforward for the skilled person to solve the objective problem by replacing the fiber optical connector of the fiber optic plug disclosed in document E29 by the corresponding standardized fiber optical connector required for compatibility with an optic receptacle or adaptor of the MTRJ, SC or LC type well known in the art, i.e. by an MTRJ, SC or LC connector as specified in claim 1, or by modifying the fiber optical connector correspondingly, while maintaining the remaining structural and functional features of the fiber optic plug of document E29. In addition, the skilled person would not find any difficulty in integrating an MTRJ, SC or LC connector in the plug body of the fiber optic plug of document E29.

6.2.2 However, the fiber optic plug disclosed in document E29 constitutes a fiber optic plug (plug "A" represented in Fig. 1(a)) specifically designed for connection with an identical fiber optic plug (plug "(B)" represented in Fig. 1(b)) via an adaptor (adaptor "(C)" represented in Fig. 1(c)) specifically designed to receive the two fiber optic plugs and to mechanically and optically couple them to each other (column 2, lines 28 to 40). Therefore, the problem of the compatibility or intermateability of the fiber optic plug with other fiber optic plugs, receptacles or adaptors, in particular of one of the standardized types known in the art, would not appear in the technical context of document E29, and in this respect the board adheres to the patent proprietor's submissions that only hindsight knowledge of the claimed invention would suggest starting with the fiber optic plug of document E29 and then to consider the idea of modifying the fiber optic plug in order to render it compatible with fiber optic receptacles or adaptors of the known standardized types.

In addition, the fiber optic plug of document E29 does not comprise a stand-alone connector disposed within the plug body, but a fiber optic connector mechanically integrated in the plug body and, more specifically, a ferrule mechanically cooperating with a washer of the plug body by the intermediate of a coil spring (see penultimate paragraph of point 5.2.2 above), the fiber optic connector and the plug body ensuring together the alignment and the mechanical and optical connection with the corresponding alignment and coupling means of the mentioned adaptor. In this context, the replacement of the fiber optic connector of the plug of document E29 - in particular, the replacement of the ferrule insert 3 and the ferrule 2 - by a standardized fiber

connector would then give rise to the question of how to mechanically couple this connector to the plug body of the fiber optic plug of document E29 and how to modify the corresponding assembly to maintain the aligning and the coupling capability to a corresponding adaptor, and in the board's opinion these questions would dissuade the skilled person from considering replacing the fiber optic connector of document E29 by a stand-alone, standardized fiber optic connector of any of the claimed MTRJ, SC and LC types. The board also notes in this respect that, contrary to the submissions of opponent 3, it would not be sufficient to replace the plug ferrules 2 by appropriate ferrules to arrive at the claimed subject-matter, because claim 1 requires that the fiber optic connector of the plug is an MTRJ, SC or LC connector, and these connectors are not only defined by the type of ferrules (see point 3.2.1 above).

- 6.2.3 For these reasons, the board adheres to the patent proprietor's submissions that the claimed fiber optic plug is not obvious in the light of document E29.
- 6.3 The board concludes that the subject-matter of claim 1, and consequently also that of dependent claims 2 and 3, involves an inventive step (Articles 52(1) and 56 EPC).
- 7. Having regard to all the above considerations and conclusions, the board is of the opinion that the patent amended according to the present sole request of the patent proprietor and the invention to which it relates meet the requirements of the EPC within the meaning of Article 101 (3) (a) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent as amended in the following version:
 - Claims: 1 to 3 according to the sole request filed as seventh auxiliary request during the oral proceedings of 12 February 2020,
 - Description: Pages 2 and 5 to 8 of the patent specification, and pages 3 and 4 marked "18:12" and filed during the oral proceedings of 12 February 2020,
 - Drawings: Figures 1 to 12 of the patent specification.

The Registrar:

The Chairman:



D. Magliano

R. Bekkering

Decision electronically authenticated