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Datasheet for the decision of 10 June 2015

Case Number: T 1363/11 - 3.4.02

Application Number: 06748697.7

Publication Number: 1864167

IPC: G02B6/42, G01M11/00

Language of the proceedings: EN

Title of invention:
FIBER OPTIC TRANSCEIVER MODULE HAVING BUILT-IN TEST CAPABILITY AND ASSOCIATED METHOD

Applicant:
The Boeing Company

Headword:

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
Amendments - added subject-matter (yes)

Decisions cited:

Catchword:

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Case Number: T 1363/11 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 10 June 2015

Appellant: (Applicant)	The Boeing Company 100 North Riverside Plaza Chicago, IL 60606 (US)
Representative:	Land, Addick Adrianus Gosling Arnold & Siedsma Bezuidenhoutseweg 57 2594 AC Den Haag (NL)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 17 February 2011 refusing European patent application No. 06748697.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	B. Müller
Members:	A. Hornung
	F. J. Narganes-Quijano

Summary of Facts and Submissions

I. The applicant appealed against the decision of the examining division refusing European patent application No. 06748697.7 on the basis of Article 56 EPC (main request and auxiliary requests 1 to 3).

II. In the statement setting out the grounds of appeal, the appellant requested that the decision of the examining division be set aside and a patent be granted on the basis of the main request or of any of auxiliary requests 1 to 4. The main request and the auxiliary requests 1 to 3 were the subject of the appealed decision. Auxiliary request 4 was filed with the statement of grounds of appeal. With a communication of the Board annexed to a summons to oral proceedings the Board informed the appellant that, in its preliminary view, the main request and auxiliary requests 1 and 2 were not admissible and that claim 1 of both auxiliary requests 3 and 4 did not meet the requirements of the EPC. In response thereto, with a letter dated 11 May 2015, the appellant submitted auxiliary request 5 and, at the same time, withdrew the main request and auxiliary requests 1 and 2. The Board subsequently informed the appellant that, in its provisional view, auxiliary request 5 did not meet the requirements of the EPC, either.

Notwithstanding the withdrawal of the higher-ranking requests, in the present decision the remaining auxiliary requests 3 to 5 will, for ease of reference, continue to be referred to as auxiliary requests 3 to 5, respectively.

III. The appellant informed the board with a letter dated 8 June 2015 that it would not appear at the oral proceedings. Oral proceedings were held on 10 June 2015 in the absence of the appellant.

IV. Independent claim 1 according to auxiliary request 3 reads as follows:

"1. A portable fiber optic transceiver module having built-in test capability comprising:

- a portable housing;
- an internal optical fiber (12) having an angled end (24) that defines an acute angle relative to a longitudinal axis of the optical fiber;
- an optical source (16) arranged for emitting an optical signal through a side surface of the optical fiber, which optical signal is reflected by the angled end of the optical fiber and propagated along the optical fiber;
- an optical-to-optical connector arranged at a known position with respect to said angled end and configured for connecting the internal optical fiber to an external optical fiber;
- an optical detector (26), positioned in alignment with the longitudinal axis of the optical fiber and arranged for receiving a return optical signal transmitted through the angled end of the optical fiber in response to reflection from a discontinuity in the external optical fiber; and
- an optical time domain reflectometer (OTDR), responsive to the optical detector, for determining an elapsed time between emission of the optical signal and receipt of the return optical signal, wherein the OTDR is configured to ignore any received return reflection signal corresponding to a reflection of said emitted optical signal at the optical-to-optical connector based on a propagation time corresponding to said predefined position, and wherein said OTDR is formed by an application specific integrated circuit (ASIC) (36)

or field programmable gate array (FPGA) arranged inside said portable housing;

- a connector (30) arranged to provide output of said OTDR to a system external to said portable housing."

V. Independent claim 1 according to auxiliary request 4 reads as follows:

"1. A portable fiber optic transceiver module having built-in test capability comprising:

- a portable housing;
- an internal optical fiber (12) extending from within the portable housing to outside of the portable housing, said internal optical fiber having an angled end (24) arranged in the portable housing that defines an acute angle relative to a longitudinal axis of the optical fiber, and a further end arranged outside of said portable housing;
- an optical source (16) arranged in said portable housing and configured for emitting an optical signal through a side surface of the optical fiber, which optical signal is reflected by the angled end of the optical fiber and propagated along the optical fiber;
- an optical-to-optical connector connected to said further end of the internal optical fiber and arranged at a known position with respect to said angled end, the optical-to-optical connector being configured for connecting the internal optical fiber to an external optical fiber;
- an optical detector (26) arranged in the portable housing and positioned in alignment with the longitudinal axis of the optical fiber and arranged for receiving a return optical signal transmitted through the angled end of the optical fiber in response to

reflection from a discontinuity in the external optical fiber; and

- an optical time domain reflectometer (OTDR), responsive to the optical detector, for determining an elapsed time between emission of the optical signal and receipt of the return optical signal, wherein the OTDR is formed by an application specific integrated circuit (ASIC) (36) or field programmable gate array (FPGA) which is arranged inside said portable housing and which is designed to ignore any received return reflection signal corresponding to a reflection of said emitted optical signal at the optical-to-optical connector based on a propagation time corresponding to said predefined position;
- a connector (30) arranged to provide output of said OTDR to a system external to said portable housing."

VI. Independent claim 1 according to auxiliary request 5 reads as follows:

"1. A fiber optic transceiver module having built-in test capability comprising:

- an existing optical fiber;
- a portable housing;
- an internal optical fiber (12) extending from within the portable housing to outside of the portable housing, said internal optical fiber having an angled end (24) arranged in the portable housing that defines an acute angle relative to a longitudinal axis of the optical fiber, and a further end arranged outside of said portable housing;
- an optical source (16) arranged in said portable housing and configured for emitting an optical signal through a side surface of the optical fiber, which

optical signal is reflected by the angled end of the optical fiber and propagated along the optical fiber;

- an optical-to-optical connector connected to said further end of the internal optical fiber and arranged at a known position with respect to said angled end, the optical-to-optical connector connecting the internal optical fiber to the external optical fiber;
- an optical detector (26) arranged in the portable housing and positioned in alignment with the longitudinal axis of the optical fiber and arranged for receiving a return optical signal transmitted through the angled end of the optical fiber in response to reflection from a discontinuity in the external optical fiber; and
- an optical time domain reflectometer (OTDR), responsive to the optical detector, for determining an elapsed time between emission of the optical signal and receipt of the return optical signal, wherein the OTDR is formed by an application specific integrated circuit (ASIC) (36) or field programmable gate array (FPGA) which is arranged inside said portable housing and which is designed to ignore any received return reflection signal corresponding to a reflection of said emitted optical signal at the optical-to-optical connector based on a propagation time corresponding to said predefined position;
- a connector (30) arranged to provide output of said OTDR to a system external to said portable housing."

Reasons for the Decision

1. Auxiliary request 3

Claim 1 contains subject-matter which extends beyond the content of the application as filed, contrary to the requirements of Article 123(2) EPC.

Present claim 1 defines a *portable* fiber optic transceiver module having a built-in test capability. The feature "portable" in combination with the feature "built-in test capability" introduces subject-matter which extends beyond the content of the original application.

The board notes that the term "portable" is used only once in the original application, namely in the penultimate paragraph [0036] of the description, for describing a "portable OTDR to test discontinuity of an existing optical fiber in an optical fiber system that does not have BIT [built-in test] capability". As described in [0036], the portable OTDR comprises inter alia "an internal optical fiber having an angled end face and connected to an optical-to-optical connector", wherein "the optical-to-optical connector of such a module may be connected to an existing optical fiber". The expression "existing optical fiber" is used in the sense of *external* optical fiber, opposed to the *internal* optical fiber of the OTDR.

However, a portable OTDR as originally disclosed excludes a fiber optic transceiver with a *built-in* test capability. Indeed, the built-in test capability, according to the application, is the intrinsic capability of a "fiber optic transceiver that is *otherwise* responsible for transmitting and receiving signals via the associated [external] optical fiber" (page 1, lines 20-22, emphasis added by the board) to identify the existence and the location of a damage in the

associated external optical fiber (page 1, lines 15-20), said associated external optical fiber establishing the communication link between the transceiver and another optoelectronic device (see page 2, lines 12-14). Since the fiber optic transceiver of the portable OTDR has neither a transceiver nor an associated external optical fiber for establishing a communication link with an optoelectronic device, but only a transceiver for OTDR purposes and an internal fiber connectable to an external fiber, the portable OTDR, as originally disclosed, lacks a built-in test capability.

The board is also unable to see an implicit disclosure of the portability of the fiber optic transceiver module having a built-in test capability, i.e. of the fiber optic transceiver module as originally claimed. Indeed, the fiber optic transceiver module of original claim 1, shown in figures 1 to 3, comprises an external optical fiber for establishing a communication link with another optoelectronic device, the external optical fiber being generally installed in a non-portable manner, i.e. the fiber optic transceiver module of claim 1 as originally filed is not portable.

In conclusion, the original application discloses two distinct embodiments, namely a first embodiment corresponding to claim 1 as originally filed and shown in figures 1 to 3, relating to a transceiver with *built-in* test capability and comprising an external fiber to be tested, and a second embodiment corresponding to a *portable* OTDR as outlined in paragraph [0036] of the original description. Present claim 1 attempts to define a third, hybrid embodiment which has no basis in the application as originally filed since it relates to a transceiver having simultaneously a *portable* and a *built-in* test capability and comprising an internal fiber to be connected to an external fiber to be tested.

2. Auxiliary request 4

Claim 1 contains subject-matter which extends beyond the content of the application as filed, contrary to the requirements of Article 123(2) EPC.

Claim 1 of auxiliary request 4 defines a *portable* fiber optic transceiver module having a *built-in* test capability and including essentially all the features of claim 1 of auxiliary request 3. Therefore, the same objection raised and underlying reasons given under Article 123(2) EPC at point 1 above with respect to claim 1 of auxiliary request 3, apply to claim 1 of auxiliary request 4.

3. Auxiliary request 5

Claim 1 contains subject-matter which extends beyond the content of the application as filed, contrary to the requirements of Article 123(2) EPC.

Claim 1 of auxiliary request 5 differs from claim 1 of auxiliary request 4 essentially in that it defines "a fiber optic transceiver module having built-in test capability" instead of "a *portable* fiber optic transceiver module having built-in test capability". However, the claimed "fiber optic transceiver module having built-in test capability" of auxiliary request 5 still comprises a portable housing in which an optical source and an optical detector are arranged. Since claim 1 still comprises a transceiver having simultaneously a *portable* and a *built-in* test capability, it contravenes the requirements of Article 123(2) EPC for the same reasons as those given at point 1 above.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Kiehl B. Müller

Decision electronically authenticated