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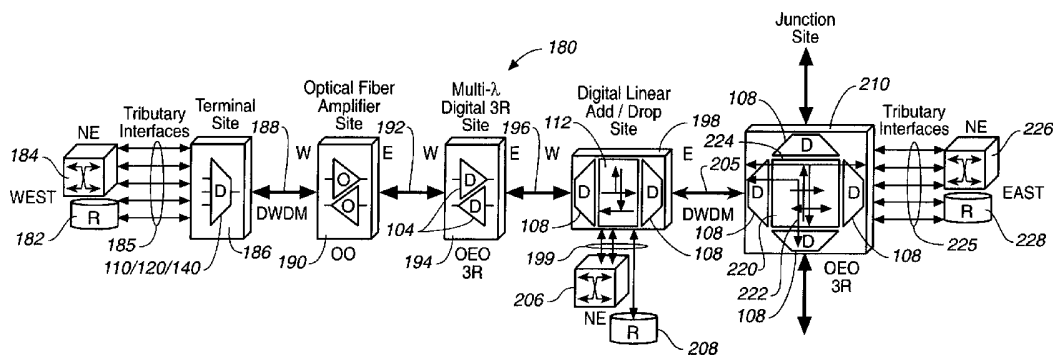
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 - (74) Agent: **CAROTHERS, W., Douglas**; Infinera Corporation, 1322 Bordeaux Drive, Sunnyvale, CA 94089 (US).
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(54) Title: DIGITAL OPTICAL NETWORK ARCHITECTURE



(57) Abstract: A digital optical network (DON) is a new approach to low-cost, more compact optical transmitter modules and optical receiver modules for deployment in optical transport networks (OTNs). One important aspect of a digital optical network is the incorporation in these modules of transmitter photonic integrated circuit (TxPIC) chips and receiver photonic integrated circuit (RxPIC) chips in lieu of discrete modulated sources and detector sources with discrete multiplexers or demultiplexers.

WO 2003/032549 A3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 02/32111

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04J14/02 H04B10/16 G02B6/34 H01S5/026 H01S5/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04J H04B G02B H01S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>SITCH J ET AL: "The use of III-V ICs in WDM optical network equipment" GALLIUM ARSENIDE INTEGRATED CIRCUIT (GAAS IC) SYMPOSIUM, 1995. TECHNICAL DIGEST 1995., 17TH ANNUAL IEEE SAN DIEGO, CA, USA 29 OCT.-1 NOV. 1995, NEW YORK, NY, USA, IEEE, 29 October 1995 (1995-10-29), pages 177-180, XP010196754 ISBN: 0-7803-2966-X abstract chapters II, III and VI reference '5! figures 1,3</p> <p style="text-align: center;">---</p> <p style="text-align: center;">-/--</p>	<p>1-44, 57-107</p>

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

4 February 2004

Date of mailing of the international search report

20. 02. 04

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INTERNATIONAL SEARCH REPORT

 International Application No
 PCT/US 02/32111

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 030 471 A (CIT ALCATEL) 23 August 2000 (2000-08-23) paragraph '0001! - paragraph '0002! paragraph '0027! - paragraph '0030!	1-44, 57-107
A	YOUNG M G ET AL: "A 16X1 WDM TRANSMITTER WITH INTEGRATED DBR LASERS AND, ELECTROABSORPTION MODULATORS" INTEGRATED PHOTONICS RESEARCH, WASHINGTON, DC, US, vol. 10, 1993, pages 414-417, XP000472984 the whole document	1-44, 57-107
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A	EP 1 087 553 A (CIT ALCATEL) 28 March 2001 (2001-03-28) the whole document	1-44, 57-107
X	EP 1 076 434 A (FUJITSU LTD) 14 February 2001 (2001-02-14) abstract paragraph '0141! - paragraph '0268! paragraph '0332! - paragraph '0336!	45-56
X	EP 1 049 272 A (NIPPON ELECTRIC CO) 2 November 2000 (2000-11-02) abstract paragraph '0004! - paragraph '0007! paragraph '0018! - paragraph '0038! paragraph '0043! - paragraph '0053!	108-110
X	MCDERMOTT T C: "Optical networks in the real world" BROADBAND OPTICAL NETWORKS AND TECHNOLOGIES: AN EMERGING REALITY/OPTICAL MEMS/SMART PIXELS/ORGANIC OPTICS AND OPTOELECTRONICS, 1998 IEEE/LEOS SUMMER TOPICAL MEETINGS MONTEREY, CA, USA, 20 July 1998 (1998-07-20), pages 37-38, XP010292480 ISBN: 0-7803-4953-9 page 38, column 1, paragraph 3	108-110
E	WO 03 032021 A (INFINERA CORP) 17 April 2003 (2003-04-17) the whole document	1-44, 57-107
E	US 2003/099018 A1 (DOMINIC VINCENT G ET AL) 29 May 2003 (2003-05-29) the whole document	1-110

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 02/32111

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	US 2003/095737 A1 (DOMINIC VINCENT G ET AL) 22 May 2003 (2003-05-22) the whole document -----	1-44, 57-107

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 02/32111

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-44,57-107

Apparatus for or method of OEO conversion for signal regeneration

2. Claims: 45-56

A business model with transmission capacity not initially required by the customer or provider and possibly activated to accommodate an increase demand in signal traffic

3. Claims: 108-110

A method of improving the monitoring capabilities of an OTN

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/32111

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 02/32111

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