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[Continued on next page]  

(54) Title:  FAST-SWITCHING SCALABLE OPTICAL INTERCONNECTION DESIGN WITH FAST CONTENTION RESOLUTION  

(57) Abstract: A scalable optical interconnect includes a plurality of transmitters, a multiplexing subsystem able to combine the signals of the plurality of transmitters onto one or more transport fibers according to an orthogonal multiplexing scheme, multiple broadband burst-mode receivers structured and positioned so as to be capable of receiving any signal from any one transmitter of the plurality of transmitters, a distribution subsystem structured so as to be able to distribute independently and contemporaneously the signals of every transmitter to every receiver; and one or more selection subsystems structured and arranged so as to be capable of selecting, in less than 1 microsecond, a single channel from within the orthogonal multiplexing scheme. A method and architecture for distributed contention resolution is also disclosed.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
# A. CLASSIFICATION OF SUBJECT MATTER

**IPCP 7**

- H04Q11/00
- H04B10/00

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)

**IPCP 7**

- H04Q
- H04L
- H04B

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

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

- EPO-Internal, WPI Data

# C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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<tr>
<td>Y</td>
<td>page 30, right-hand column, lines 18-26 figure 5</td>
<td>7</td>
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Further documents are listed in the continuation of box C.

* 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

11 June 2004

Date of mailing of the international search report

08. 09. 2004

Name and mailing address of the ISA

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NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 851 epo nl,
Fax. (+31-70) 340-3016

Authorized officer

Dhondt, E
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<td>figures 1-3 page 357, left-hand column, lines 7-29</td>
<td>7,10,11</td>
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<td>A</td>
<td>EP 1 162 862 A (CIT ALCAETEL) 12 December 2001 (2001-12-12) page 9, left-hand column, lines 1-7</td>
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INTERNATIONAL SEARCH REPORT

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. X 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.:

   1-14

Remark on Protest

□ The additional search fees were accompanied by the applicant's protest.

□ No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-14
   A scalable optical interconnect, capable of switching in multiple switching dimensions

2. claims: 15,16
   System and method for contention resolution
<table>
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<td>EP 1162862 A</td>
<td>12-12-2001</td>
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