(54) Title: EFFICIENT OPTICAL NETWORK DESIGN USING MULTI-GRANULAR OPTICAL CROSS-CONNECTS WITH WAVELENGTH BAND SWITCHING

(57) Abstract: A method for managing static data traffic of at least one light path in an optical network, comprising the steps of achieving load balanced path routing for the at least one light path, assigning wavelengths to demands of the at least one light path, and, switching the at least one light path according to its assigned wavelength. A method for managing dynamic data traffic of at least one light path in an optical network, comprising the steps of routing the K-shortest path, which has the largest interference length (L), and, assigning waveband with a First-Fit network topology based on band/port number restriction and minimum weight.

Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
16 September 2004

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.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04Q11/00  H04J14/02

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 H04Q H04J

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

Further documents are listed in the continuation of box C.

Date of the actual completion of the International search

25 March 2004

Date of mailing of the International search report

13. 07. 2004

Name and mailing address of the ISA

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Dhondt, E
<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
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</table>
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.  □  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.:

   1-4, 9

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: 1-4,9
   Method and apparatus for managing data traffic in an optical network using wavelength conversion.

2. claims: 5-8,10
   Method and apparatus for managing data traffic in an optical network, using waveband conversion.

3. claims: 11-15
   A method for managing static data traffic.

4. claims: 16-18
   A method for managing dynamic data traffic.