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(54) Title: EFFICIENT OPTICAL TRANSMISSION SYSTEM

(57) Abstract: A transmitter for optical communication systems includes a source of optical radiation, a source of complex non-information signals, and a modular unit in communication with the source of optical radiation. The modulator unit is also in communication with the source of complex non-information signals. The modulator has an input adapted to receive information-bearing signals.

INTERNATIONAL SEARCH REPORT

Internal application No

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04B10/155

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 H04B

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, 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>US 5 515 196 A (SANO HIROHISA ET AL) 7 May 1996 (1996-05-07)</p> <p>column 1, line 58 -column 2, line 4; figure 2 column 2, line 44-51 column 2, line 60 -column 3, line 6 column 6, line 30-37; figure 1 column 6, line 45 -column 7, line 11; figure 4 column 7, line 26 - last line; figure 5 column 11, line 1-15; figure 11</p> <p style="text-align: center;">---</p> <p style="text-align: center;">-/--</p>	<p>1-8, 11, 12, 15, 20, 21, 23-29, 31-34, 37, 38, 41, 46-49, 51, 52</p>

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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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.

& document member of the same patent family

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>HIROSE A ET AL: "SUPPRESSION OF STIMULATED BRILLOUIN SCATTERING AND BRILLOUIN CROSSTALK BY FREQUENCY-SWEEPING SPREAD-SPECTRUM SCHEME*" JOURNAL OF OPTICAL COMMUNICATIONS, FACHVERLAG SCHIELE & SCHON, BERLIN, DE, vol. 12, no. 3, 1 September 1991 (1991-09-01), pages 82-85, XP000241880 ISSN: 0173-4911 Summary page 84, left-hand column, paragraph 4; figure 4</p>	<p>1-8, 11, 20, 21, 23-29, 31-34, 37, 46-49, 51</p>
X A	<p>----- US 5 477 368 A (ESKILDSEN LARS E ET AL) 19 December 1995 (1995-12-19)</p> <p>column 1, line 23-41 column 2, line 32-53; figure 1 -----</p>	<p>1, 6-8, 11, 20, 21, 23, 24, 29, 31-34, 37 2-5, 25-28, 46-52</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internal application No
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5515196	A	07-05-1996	JP 3223562 B2 29-10-2001
			JP 5289125 A 05-11-1993
			DE 69332131 D1 29-08-2002
			DE 69332131 T2 27-03-2003
			EP 0565035 A2 13-10-1993

US 5477368	A	19-12-1995	DE 69510438 D1 29-07-1999
			DE 69510438 T2 18-11-1999
			EP 0720313 A1 03-07-1996
			JP 8234251 A 13-09-1996
