

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
21 February 2002 (21.02.2002)

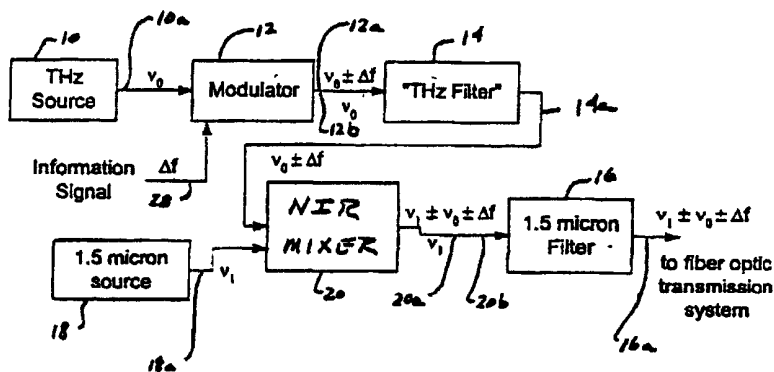
PCT

(10) International Publication Number  
WO 02/15416 A3

- (51) International Patent Classification<sup>7</sup>: H04B 10/08, 10/04
- (74) Agent: COLBURN, Philmore, H., II; Cantor Colburn LLP, 55 Griffin Road South, Bloomfield, CT 06002 (US).
- (21) International Application Number: PCT/US01/25358
- (81) Designated State (national): JP.
- (22) International Filing Date: 13 August 2001 (13.08.2001)
- (84) Designated States (regional): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/225,882 17 August 2000 (17.08.2000) US
- (71) Applicant: TERABIT COMMUNICATIONS, L.L.C. [US/US]; 1280 Blue Hills Avenue, Bloomfield, CT 06002 (US).
- (88) Date of publication of the international search report: 28 March 2002
- (72) Inventors: DEMARIA, Anthony, J.; 19 Garfield Road, West Hartford, CT 06107 (US). MUELLER, Eric, R.; 34 Wheeler Drive, West Suffield, CT 06033 (US).

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.

(54) Title: HIGH-SPEED COMMUNICATIONS SYSTEM



(57) Abstract: A communications transmission system which modulates a radiation source at higher rates for either fiber optic telecommunication systems or for digital electrical or optical switches associated with computer routers or servers is presented. The transmission system increases the amount of analog or digital information that can be transmitted over a communications network. The system comprises a first source (10) for providing a carrier signal; a modulator (12) receptive of the carrier signal and an information signal to generate thereby a modulated carrier signal; a second source

(18) for providing a transmission signal; and a signal mixer (20) receptive of the modulated carrier signal and the transmission signal to generate a frequency shifted transmission signal. A method of increasing the amount of information transmitted over a communications channel comprises modulating a carrier signal with an information signal, generating thereby a modulated carrier signal; and mixing a transmission signal with the modulated carrier signal, generating thereby a frequency shifted transmission signal.

WO 02/15416 A3

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US01/25358

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC(7) : H04B 10/08, 10/04  
 US CL : 359/184, 110  
 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)  
 U.S. : 359/184, 110

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
 NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 EAST, WEST, optical switch, mixer

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,043,920 A (LEOPOLD et al) 28 March 2000, Figs. 2 and 3, col. 3, lines 6-67, col. 4, lines 1-20.	1-62
Y	US 5,822,103 A (BOROSON) 13 October 1998, Figs. 1 and 3, col. 4, lines 15-67, col. 5, lines 1-32, col. 6, lines 7-44.	1-62
Y	US 6,031,644 A (UTSUMI) 29 February 2000, Figs. 1 and 2, col. 3, lines 20-67.	9-12 and 29-34

Further documents are listed in the continuation of Box C.  See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier document published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search 01 NOVEMBER 2001	Date of mailing of the international search report <b>14 FEB 2002</b>
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20251 Facsimile No. (703) 305-3230	Authorized officer <i>Leslie Pascal</i> LESLIE PASCAL Telephone No. (703) 305-4700