

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
4 October 2007 (04.10.2007)

PCT

(10) International Publication Number
WO 2007/111797 A3

(51) International Patent Classification:
H04B 10/17 (2006.01) *H04B 10/12* (2006.01)

(21) International Application Number:
PCT/US2007/004420

(22) International Filing Date:
19 February 2007 (19.02.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/277,332 23 March 2006 (23.03.2006) US

(71) Applicant (for all designated States except US): **XTERA COMMUNICATIONS, INC.** [US/US]; 500 West Bethany Drive, Allen, TX 75013-1225 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **PUC, Andrej, B.** [SI/US]; 1434 Mckenzie Court, Allen, TX 75013 (US). **KAMINSKI, Andrzej, S.** [PL/US]; 1402 Shelborn Drive, Allen, TX 75002 (US). **CHANG, Do, II** [KR/US]; 1818 Glenville Drive, Allen, TX 75013 (US).

(74) Agent: **GAFFNEY, Brian, J.**; Baker Botts L.L.p., 2001 Ross Avenue, Suite 600, Dallas, TX 75201 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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:
13 November 2008



WO 2007/111797 A3

(54) Title: SYSTEM AND METHOD FOR IMPLEMENTING A BOOSTERLESS OPTICAL COMMUNICATION SYSTEM

(57) Abstract: An optical communication system includes a transmission fiber that is operable to receive at least one optical signal and at least one pump signal. The optical signal includes one or more optical signal wavelengths and a power level at approximately a minimum threshold/power level. The pump signal co-propagates with at least a portion of the optical signal over at least a portion of the transmission fiber. In one particular embodiment, the pump signal operates to amplify the optical signal to approximately a maximum threshold power level as the pump signal and the optical signal traverse the portion of the transmission fiber.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/04420

A. CLASSIFICATION OF SUBJECT MATTER
 IPC: **H04B 10/17(2006.01),10/12(2006.01)**

USPC: 359/334;398/160
 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. : 359/334;398/160

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


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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US Pat. App. 2004/021287A1 (Hoshida et al.) 28 October 2004 (28.10.2004) (Fig. 1, paragraphs [0001],[0025].	1-21
Y	US 6,618,176 (Alexander et al.), 9 September 2003, (09.09.2003), column 6, lines 30-35, claim 30.	4, 10, 17
Y	Agrawal G. Fiber-Optic Communication Systems, 3rd edition. Wiley-Interscience. 2002. pp. 192-193.	1-21

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 application or patent 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 30 July 2008 (30.07.2008)	Date of mailing of the international search report 15 SEP 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer ERIC BOLDA  Telephone No. 571-272-8104