

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
24 December 2003 (24.12.2003)

PCT

(10) International Publication Number
WO 2003/107688 A3

(51) International Patent Classification⁷: **H04J 13/02**

Street, Selden, NY 11784 (US). **ZEIRA, Ariela**; 239 West Neck Road, Huntington, NY 11743 (US). **REZNIK, Alexander**; 109 Wrangel Court, #5, Princeton, NJ 08540 (US).

(21) International Application Number:
PCT/US2003/018438

(22) International Filing Date: 11 June 2003 (11.06.2003)

(74) Agents: **VOLPE, Anthony, S.** et al.; Volpe and Koenig, P.C., suite 400, One Penn Center, 1617 John F. Kennedy Boulevard, Philadelphia, PA 19103 (US).

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/174,121 18 June 2002 (18.06.2002) US

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

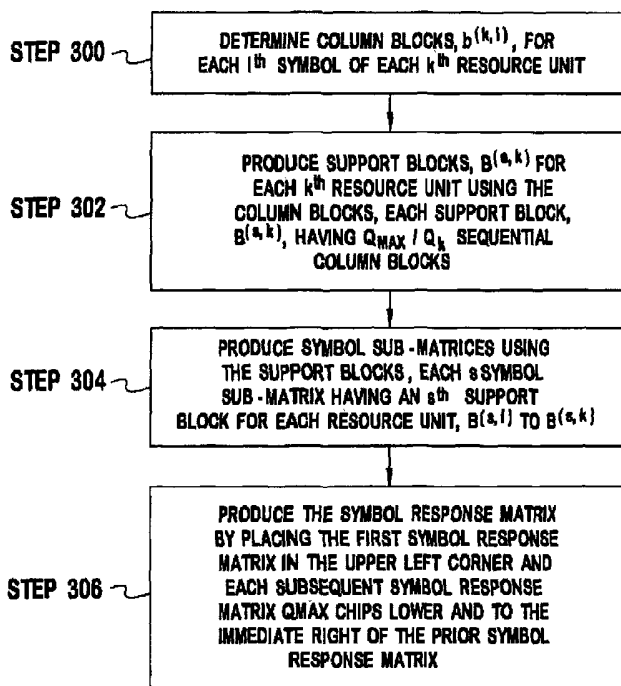
(71) Applicant: **INTERDIGITAL TECHNOLOGY CORPORATION** [US/US]; 300 Delaware Avenue, Suite 527, Wilmington, DE 19801 (US).

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

(72) Inventors: **KIM, Younglok**; Mapo-Gu, Seokyo-Dong, 473-12, Seoul 121-110 (KR). **PAN, Jung-Lin**; 15 Court

[Continued on next page]

(54) Title: MULTIUSER DETECTOR FOR VARIABLE SPREADING FACTORS



(57) Abstract: A plurality of communication signals have differing spreading codes. Each communication has an associated code comprising chips. For each chip of each communication, a vector of that chip convolved with an impulse response is produced. For each communication, support blocks comprising the chip vectors are produced (302). A number of the chip vectors in a support block is based on that communication's spreading factor. A system response matrix is assembled. The system response matrix has symbol sub-matrices (304). Each symbol sub-matrix comprises a support block from each communication. Data of the communications is detected using the symbol response matrix.



European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:

4 March 2004

Published:

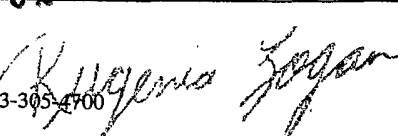
— with international search report

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

International application No.

PCT/US03/18438

A. CLASSIFICATION OF SUBJECT MATTER														
IPC(7) : H04J 13/02														
US CL : 370/335, 342; 375/147, 148														
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. : 370/335, 342; 375/147, 148														
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 practicable, search terms used) Please See Continuation Sheet														
C. DOCUMENTS CONSIDERED TO BE RELEVANT														
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.												
A, P	US 2003/0043893 A1 (JARD et al) 06 March 2003 (06.03.2003).	1												
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.														
<table border="0"> <tr> <td colspan="2">* Special categories of cited documents:</td> <td>"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</td> </tr> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"E" earlier application or patent published on or after the international filing date</td> <td>"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</td> </tr> <tr> <td>"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)</td> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"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</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td>"&" document member of the same patent family</td> <td></td> </tr> </table>			* 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	"E" earlier application or patent published on or after the international filing date	"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	"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	"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	"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family	
* 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	"E" earlier application or patent published on or after the international filing date	"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												
"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	"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												
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family													
Date of the actual completion of the international search 30 September 2003 (30.09.2003)		Date of mailing of the international search report 02 DEC 2003												
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. (703)305-3230		Authorized officer Melvin Marcelo Telephone No. 703-305-4700 												

INTERNATIONAL SEARCH REPORT

PCT/US03/18438

Continuation of B. FIELDS SEARCHED Item 3:

EAST

search terms: chip, vector, impulse