

(19) World Intellectual Property Organization  
International Bureau



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

PCT

(10) International Publication Number  
**WO 02/15428 A3**

- (51) International Patent Classification<sup>7</sup>: **H04B 1/707**, H04N 7/08
- (21) International Application Number: PCT/US01/41734
- (22) International Filing Date: 15 August 2001 (15.08.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/225,483 15 August 2000 (15.08.2000) US
- (71) Applicant (*for all designated States except US*): **DOT-CAST, INC.** [US/US]; 1808 N. Shoreline Blvd., Mountain View, CA 94043 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **CICORA, Walter, S.** [US/US]; 45 Hulls Farm Road, Southport, CT 06490-1027 (US). **HARTSON, Ted** [US/US]; 10012 North 77th Street, Scottsdale, AZ 85258 (US).
- (74) Agents: **PRATT, John, S.** et al.; Kilpatrick Stockton LLP, 1100 Peachtree Street, Suite 2800, Atlanta, GA 30309-4530 (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, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— with international search report
- (88) Date of publication of the international search report:  
13 June 2002
- 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: SPREAD SPECTRUM TRANSMISSION FOR EXPANDING INFORMATION CAPACITY IN EXISTING COMMUNICATION TRANSMISSION SYSTEMS

(57) Abstract: Systems and processes for including spread spectrum transmissions within television and radio broadcast channels without substantial degradation of the broadcast programming. The spread spectrum transmissions may carry components of the same television or radio programming, they may be the same programming, or they may be content that is unrelated to the programming. Disclosed are systems and processes for accomplishing such spread spectrum transmissions in a manner that compensates for robustness of signal components, by among other things time varying and/or varying frequency of the spread spectrum transmissions. Also disclosed are systems and processes for abating carrier signals to compensate for the effects of the spread spectrum transmissions in the channel. Further disclosed are systems and processes for conducting such transmissions in a cellular communications system.

# INTERNATIONAL SEARCH REPORT

International Application No

PC1/US 01/41734

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H04B1/707 H04N7/08

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 H04N

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, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 821 120 A (TOMLINSON MARTIN) 11 April 1989 (1989-04-11) column 1, line 50 -column 3, line 14 column 6, line 30 -column 7, line 16; claims 12-14; figures 5,6A,6B ---	1-59
X	US 5 812 184 A (MARTINEZ LOUIS) 22 September 1998 (1998-09-22) column 2, line 19 -column 3, line 44 column 8, line 21 -column 12, line 21; claims 21-24; figures 4,6-9 ---	1-59
X	US 3 838 444 A (LOUGHLIN B ET AL) 24 September 1974 (1974-09-24) column 2, line 12 - line 63 column 3, line 14 -column 5, line 64; figures 1-5 -----	1-59

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*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
- \*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.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

19 March 2002

Date of mailing of the international search report

26/03/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.  
Fax: (+31-70) 340-3016

Authorized officer

Nilsson, M

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PC1/US 01/41734

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4821120	A	11-04-1989	EP 0208425 A2	14-01-1987
			GB 2183949 A	10-06-1987
			US 4754228 A	28-06-1988
US 5812184	A	22-09-1998	US 5550579 A	27-08-1996
			US 5321514 A	14-06-1994
			US 5177604 A	05-01-1993
			US 4750036 A	07-06-1988
			AU 2098595 A	25-09-1995
			WO 9524797 A1	14-09-1995
			US 5596361 A	21-01-1997
			US 5589872 A	31-12-1996
			AU 7641487 A	01-12-1987
			CA 1339322 A1	19-08-1997
			CA 1332636 A1	18-10-1994
			CN 87104106 A ,B	09-03-1988
			CN 1064581 A ,B	16-09-1992
			CN 1064582 A ,B	16-09-1992
			DE 3751528 D1	26-10-1995
			EP 0267280 A1	18-05-1988
			JP 1502633 T	07-09-1989
			WO 8707109 A1	19-11-1987
US 3838444	A	24-09-1974	AU 5855173 A	30-01-1975
			CA 992196 A1	29-06-1976
			DE 2354197 A1	09-05-1974
			FR 2204933 A1	24-05-1974
			GB 1382406 A	29-01-1975
			IE 38406 B1	01-03-1978
			IT 1007552 B	30-10-1976
			JP 49075217 A	19-07-1974
			NL 7314924 A	02-05-1974