

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 October 2005 (27.10.2005)

PCT

(10) International Publication Number
WO 2005/101844 A3

(51) International Patent Classification:
G06F 17/00 (2006.01) H04L 9/00 (2006.01)

(74) Agent: GRUNEBACH, Georgann, S.; The DIRECTV Group, Inc., RE/R11/A109, P.O. Box 956, El Segundo, CA 90245 (US).

(21) International Application Number:
PCT/US2005/012278

(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, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 11 April 2005 (11.04.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/561,418 12 April 2004 (12.04.2004) US

(71) Applicant (for all designated States except US): THE DIRECTV GROUP, INC. [US/US]; 2250 E. Imperial Highway, El Segundo, CA 90245 (US).

(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, 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).

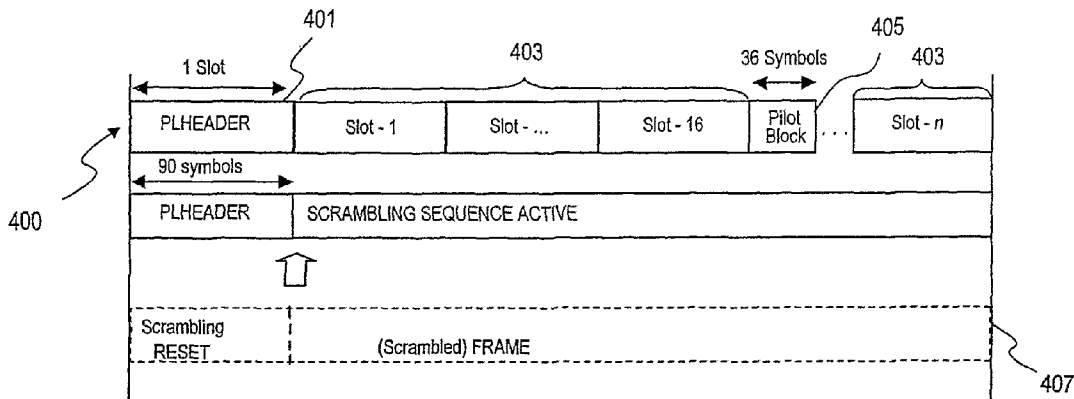
(72) Inventors: LEE, Lin-Nan; 10004 Flower Gate Terrace, Potomac, MD 20854 (US). SUN, Feng-Wen; 17904 Wheatridge Drive, Germantown, MD 20874 (US). VON ANCKEN, Adam; 5763 Windwood Way, New Market, MD 21774 (US). SANTORU, Joseph; 5425 Meadow Vista Way, Agoura Hills, CA 91301 (US). CHEN, Ernest, C.; 1025 Via Cordova, San Pedro, CA 90732 (US). MAITRA, Shamik; 1911 Camino de la Costa, #413, Redondo Beach, CA 90277 (US). LAI, Dennis; 13227 Acoro Place, Cerritos, CA 90703 (US). ZHOU, Guang-cai; 27507 Endeavor Street, Agoura Hills, CA 91301 (US). LIN, Tung-Sheng; 1662 Paine Court, Claremont, CA 91711 (US).

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:
1 February 2007

[Continued on next page]

(54) Title: PHYSICAL LAYER HEADER SCRAMBLING IN SATELLITE BROADCAST SYSTEMS



(57) Abstract: Methods and apparatuses for minimizing co-channel interference in communications systems (400) are disclosed. A method in accordance with the present invention comprises scrambling a first header (401) of the first signal using a first scrambling code, and transmitting the first signal and the second signal with the scrambled first header and the scrambled second header (401) over different channels of the communication system.

WO 2005/101844 A3



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/US05/12278

A. CLASSIFICATION OF SUBJECT MATTER
 IPC: **G06F 17/00(2006.01);H04L 9/00(2006.01)**

 USPC: **707/100;713/150**
 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. : 707/100; 713/150

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)
 WEST, Internet search terms: header, scrambling, television, satellite

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5321754 A (FISHER ET AL.) 14 JUNE 1994 (14.06.1994), column 2, lines 12-60	1-20
A	US 6618367 B1 (RIAZI ET AL.) 09 SEPTEMBER 2003 (09.09.2003), column 1, lines 15-57	1-20
A	US 5506903 A (YAMASHITA) 09 APRIL 1996 (09.04.1996) column 1, lines 14-25	1-20

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

* Special categories of cited documents:		
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"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)	"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
"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	"&"	document member of the same patent family

Date of the actual completion of the international search
01 October 2006 (01.10.2006)

Date of mailing of the international search report
01 DEC 2006

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
Michelle R. Eason
 David Y. Jung
 Telephone No. 7033085262

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/12278

Box IV TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

NEW ABSTRACT

Methods and apparatuses for minimizing co-channel interference in communications systems (400) are disclosed. A method in accordance with the present invention comprises scrambling a first header (401) of the first signal using a first scrambling code, and transmitting the first signal and the second signal with the scrambled first header and the scrambled second header (401) over different channels of the communication system.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/12278

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC: G06F 17/00(2006.01);H04L 9/00(2006.01) USPC: 707/100;713/150 According to International Patent Classification (IPC) or to both national classification and IPC</p>														
<p>B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 707/100; 713/150 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) WEST, Internet search terms: header, scrambling, television, satellite</p>														
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category *</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>US 5321754 A (FISHER ET AL.) 14 JUNE 1994 (14.06.1994), column 2, lines 12-60</td> <td>1-20</td> </tr> <tr> <td>A</td> <td>US 6618367 B1 (RIAZI ET AL.) 09 SEPTEMBER 2003 (09.09.2003), column 1, lines 15-57</td> <td>1-20</td> </tr> <tr> <td>A</td> <td>US 5506903 A (YAMASHITA) 09 APRIL 1996 (09.04.1996) column 1, lines 14-25</td> <td>1-20</td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	US 5321754 A (FISHER ET AL.) 14 JUNE 1994 (14.06.1994), column 2, lines 12-60	1-20	A	US 6618367 B1 (RIAZI ET AL.) 09 SEPTEMBER 2003 (09.09.2003), column 1, lines 15-57	1-20	A	US 5506903 A (YAMASHITA) 09 APRIL 1996 (09.04.1996) column 1, lines 14-25	1-20
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.												
A	US 5321754 A (FISHER ET AL.) 14 JUNE 1994 (14.06.1994), column 2, lines 12-60	1-20												
A	US 6618367 B1 (RIAZI ET AL.) 09 SEPTEMBER 2003 (09.09.2003), column 1, lines 15-57	1-20												
A	US 5506903 A (YAMASHITA) 09 APRIL 1996 (09.04.1996) column 1, lines 14-25	1-20												
<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.</p>														
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</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>"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>"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>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"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	"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)	"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	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed			
"A" document defining the general state of the art which is not considered to be of particular relevance	"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													
"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)	"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													
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family													
"P" document published prior to the international filing date but later than the priority date claimed														
<p>Date of the actual completion of the international search 01 October 2006 (01.10.2006)</p>		<p>Date of mailing of the international search report 01 DEC 2006</p>												
<p>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</p>		<p>Authorized officer <i>for Michelle R. Eason</i> David Y. Jung Telephone No. 7033085262</p>												