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(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, 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.

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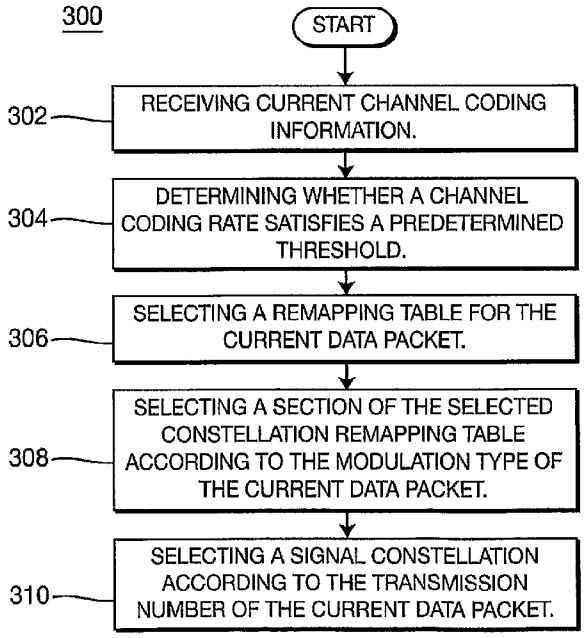
[Continued on next page]

(54) Title: METHOD FOR ADAPTIVE QUADRATURE AMPLITUDE MODULATION SIGNAL CONSTELLATION REMAPPING FOR DATA PACKET RETRANSMISSIONS



(57) Abstract: The present invention is related to a simplified QAM signal constellation symbol -wise remapping scheme for data packet retransmissions to improve performance at a high coding rate, wherein mapping rules are determined separately for the I and Q bits The present invention is further related to a method for adaptive switching between bit -wise and symbol -wise constellation remapping for data packet re- transmissions according to channel coding rate to achieve optimum performance across the range of channel coding rates.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L1/18 H04L1/00 H04L27/34 H04L27/36

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)
H04L

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, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DOTTLING M ET AL: "Incremental redundancy and bit-mapping techniques for high speed downlink packet access" GLOBECOM'03. 2003 - IEEE GLOBAL TELECOMMUNICATIONS CONFERENCE. CONFERENCE PROCEEDINGS. SAN FRANCISCO, DEC. 1 - 5, 2003, IEEE GLOBAL TELECOMMUNICATIONS CONFERENCE, NEW YORK, NY : IEEE, US, vol. VOL. 7 OF 7, 1 December 2003 (2003-12-01), pages 908-912, XP010678454 ISBN: 0-7803-7974-8 abstract section III, paragraph 1 Tabels I, II page 911, right-hand column, paragraphs 1,2 ----- -/--	1-9,17

[X] Further documents are listed in the continuation of Box C.

[X] 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

"E" earlier document but published on or after the international filing date

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"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.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 December 2007	27/12/2007

Name and mailing address of the ISA/	Authorized officer
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	Feng, Mei

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/006397

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2005/034458 A (MATSUSHITA ELECTRIC IND CO LTD [JP]; DUAN JINSONG; YAMADA DAISUKE) 14 April 2005 (2005-04-14)	1-9,17
P,A	-& EP 1 667 391 A (MATSUSHITA ELECTRIC IND CO LTD [JP]) 7 June 2006 (2006-06-07) paragraphs [0022] - [0024] paragraphs [0027], [0033] figure 6	1-9,17
A	US 2003/081690 A1 (KIM HUN-KEE [KR] ET AL) 1 May 2003 (2003-05-01) figures 7A-7D paragraphs [0022], [0033], [0061], [0085], [0094]	1-9,17
X	US 2006/036922 A1 (HONG SUNG-KWON [KR] ET AL) 16 February 2006 (2006-02-16) paragraphs [0050], [0063], [0076], [0077], [0079] figure 2 claim 12	10-16
X	EP 1 427 128 A (MATSUSHITA ELECTRIC IND CO LTD [JP]) 9 June 2004 (2004-06-09) paragraphs [0008], [0028]	10-16
X	GIDLUND M ET AL: "An improved ARQ scheme with application to multi-level modulation techniques" COMMUNICATIONS AND INFORMATION TECHNOLOGY, 2004. ISCIT 2004. IEEE INTERNATIONAL SYMPOSIUM ON SAPPORO, JAPAN OCT. 26-29, 2004, PISCATAWAY, NJ, USA,IEEE, 26 October 2004 (2004-10-26), pages 973-978, XP010783518 ISBN: 0-7803-8593-4 page 975	10-13, 15,16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/006397

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9, 17

   A method for adaptively selecting a signal constellation for data modulation and demodulation

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2. claims: 10-16

   A method for reducing the complexity of data demodulation at the receiving node when the system implements a symbol-wise remapping scheme for data packet retransmission

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2007/006397

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