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(71) Applicant: QUALCOMM INCORPORATED [US/US]; 6455 Lusk Boulevard, San Diego, CA 92121 (US).

(72) Inventors: WHEATLEY, Charles, E., III; 2208 Caminito del Barco, Del Mar, CA 92014 (US). PADOVANI, Roberto; 12634 Futura Street, San Diego, CA 92130 (US). ZEHAVI, Ephraim; 15A Watson Street, 34751 Haifa (IL).

(74) Agent: MILLER, Russell, B.; Qualcomm Incorporated, 6455 Lusk Boulevard, San Diego, CA 92121 (US).

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Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

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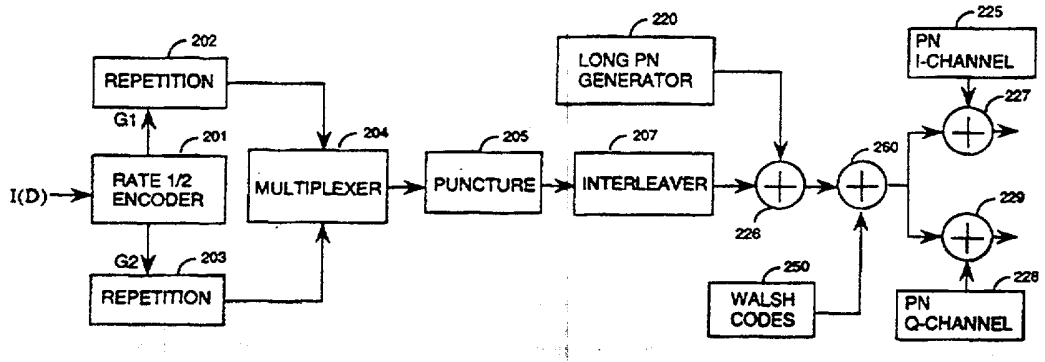
15 June 1995 (15.06.95)

(54) Title: COMMUNICATION METHOD IN A RADIOTELEPHONE SYSTEM



(57) Abstract

The process of the present invention enables a communication link to have a higher data rate input signal while maintaining a constant data rate output signal. The method first convolutionally encodes the input data signal to produce a plurality of convolutionally encoded signals. Each of the convolutionally encoded signals are comprised of a plurality of data symbols. Each data symbol is repeated a predetermined number of times to produce a code repetition data sequence at a predetermined and fixed rate. The data sequence is then punctured such that symbols in predetermined locations of the data sequence are deleted thus generating a data sequence at a predetermined and fixed rate which is lower than that of the original data sequence. The encoded signals with the repeated data symbols are multiplexed to produce a data sequence.

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INTERNATIONAL SEARCH REPORT

Int ional Application No
PCT/US 94/13595

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04B7/005 H04L1/00

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 6 H04B 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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS '87:, vol.2, 10 October 1987, NEW YORK, NY USA pages 744-748 J.HAGENAUER 'Hybrid ARQ/FEC protocols on fading channels using rate compatible punctured convolutional codes.'	1,3
A	see page 744, right column, line 9 - line 32 see page 745, left column, line 12 - page 746, left column, line 15 --- -/--	2,4-6

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

[X] Patent family members are listed in annex.

* Special categories of cited documents :

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"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

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Date of the actual completion of the international search	Date of mailing of the international search report
10 May 1995	15. 05. 95

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	Lydon, M

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INTERNATIONAL SEARCH REPORT

Int ional Application No
PCT/US 94/13595

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	39TH IEEE VEHICULAR TECHNOLOGY CONFERENCE, vol.2, 3 May 1989, SAN FRANCISCO, CA, USA pages 666-670 F.GAGNON ET AL 'An analysis of convolutional coding for land mobile channels.'	1,3
A	see page 666, right column, line 31 - line 39 see page 667, right column, line 60 - page 668, left column, line 7 see page 668, right column, line 39 - line 70	2,4-6
A	US,A,4 309 771 (WILKENS) 5 January 1982 see abstract see column 2, line 23 - column 3, line 20 see figures 1,2	7
A	EP,A,0 112 108 (RACAL-SES) 27 June 1984 see page 3, line 17 - page 6, line 10 see figures 1,2	7
A	US,A,5 216 692 (LING) 1 June 1993 see column 5, line 35 - column 6, line 5 see column 7, line 26 - line 56	7
A	EP,A,0 548 939 (NEC CORPORATION) 30 June 1993 see page 5, column 7, line 40 - page 6, column 10, line 11 see figures 3,4	7
A	PATENT ABSTRACTS OF JAPAN vol. 5, no. 176 (E-081) 12 November 1981 & JP,A,56 103 555 (NEC CORPORATION) 18 August 1981 see abstract	7

INTERNATIONAL SEARCH REPORT

rnational application No.
PCT/US94/13595

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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

1. claims 1-6: Communication link using encoder, multiplexer, puncturer, interleaver and spread spectrum techniques
2. claim 7: Power control through a feedback mechanism and a compilation of statistical data on the error rate for each rate

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

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

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers 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.

☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

In tional Application No
PCT/US 94/13595

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US-A-4309771	05-01-82	NONE		
EP-A-0112108	27-06-84	GB-A-	2132452	04-07-84
		AU-B-	558636	05-02-87
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		US-A-	4580262	01-04-86
US-A-5216692	01-06-93	CA-A-	2102793	01-10-93
		JP-T-	6508254	14-09-94
		WO-A-	9320629	14-10-93
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		US-A-	5386589	31-01-95