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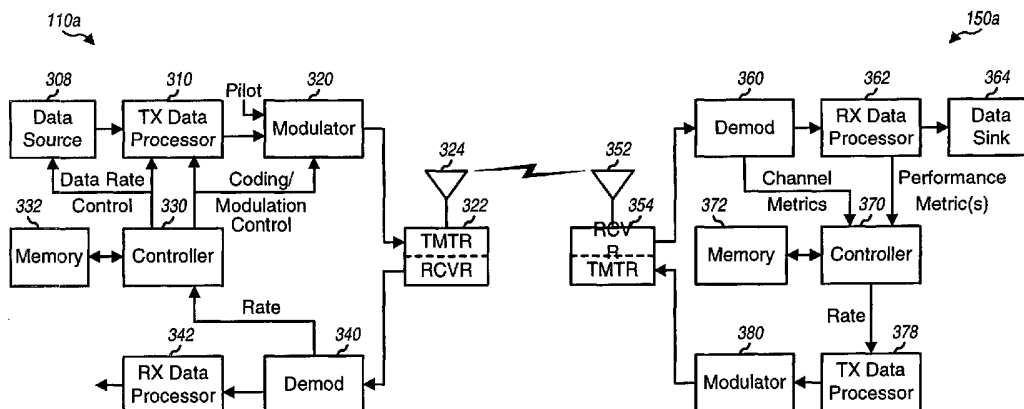
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(54) Title: ADAPTIVE RATE CONTROL FOR AN OFDM COMMUNICATION SYSTEM



(57) Abstract: Techniques to adaptively control the rate of a data transmission in a wireless (e.g., OFDM) communication system. In an aspect, various types of metrics may be derived and used to select the proper rate for the data transmission. Some types of metrics relate to different characteristics of the communication channel, such as SNR, frequency selectivity, time selectivity, and so on. One type of metric relates to the performance of the data transmission. In another aspect, the various types of metrics may be used in different manners to adaptively control the rate. Some metrics may be used for open-loop control of the rate, other metrics may be used for closed-loop control, and some may be used for both. For example, the channel metrics may be used to determine or select the rate, and the performance metrics may be used to determine whether or not to adjust the rate.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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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 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, 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 4 438 511 A (BARAN PAUL) 20 March 1984 (1984-03-20) column 4, line 45 - line 62 column 5, line 16 - line 65 column 9, line 48 - line 56 ---	1-37
X	WO 01 56309 A (VYYO LTD) 2 August 2001 (2001-08-02) page 4, line 18 -page 5, line 2 ---	1-37
X	WO 00 54473 A (AWARE INC) 14 September 2000 (2000-09-14) page 17, line 10 - line 19 ---	1-37
X	EP 1 094 629 A (MOTOROLA INC) 25 April 2001 (2001-04-25) page 4, line 38 - line 52 page 10, line 49 - line 57 ---	1-37
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Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 918 422 A (MOTOROLA INC) 26 May 1999 (1999-05-26) column 1, line 45 -column 2, line 23 -----	1-37

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/35296

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 4438511	A	20-03-1984	KR	9204132 B1	25-05-1992
WO 0156309	A	02-08-2001	AU	3973301 A	07-08-2001
			WO	0156309 A1	02-08-2001
			US	2002056132 A1	09-05-2002
WO 0054473	A	14-09-2000	AU	3876200 A	28-09-2000
			DE	1161820 T1	04-07-2002
			EP	1161820 A1	12-12-2001
			WO	0054473 A1	14-09-2000
			US	2002181609 A1	05-12-2002
			US	6498808 B1	24-12-2002
			AU	7583500 A	17-04-2001
			AU	7584600 A	17-04-2001
			EP	1212875 A1	12-06-2002
			EP	1212876 A1	12-06-2002
			JP	2003509786 T	11-03-2003
			JP	2003509966 T	11-03-2003
			WO	0120864 A1	22-03-2001
			WO	0120865 A1	22-03-2001
EP 1094629	A	25-04-2001	EP	1094629 A2	25-04-2001
EP 0918422	A	26-05-1999	US	6122247 A	19-09-2000
			EP	0918422 A2	26-05-1999