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(54) Title: DYNAMIC WIRELESS LINK ADAPTATION

500a-1

Coding Scheme (CS)	Maximum Data Rate (DR_{max}) Kbps
CS1	9.05
CS2	13.4
CS3	15.6
CS4	21.4

a

500b-1

Coding Scheme (CS)	Minimum Data Rate (DR_{min}) Kbps	Maximum Data Rate (DR_{max}) Kbps
CS1	1.0	9.05
CS2	9.05	13.4
CS3	13.4	15.6
CS4	15.6	21.4

b

500c-1

Coding Scheme (CS)	Minimum Data Rate (DR_{min}) Kbps	Maximum Data Rate (DR_{max}) Kbps	Normalized Minimum Throughput (S_{min})
CS1	1.0	9.05	1.0/9.05 = 11%
CS2	9.05	13.4	9.05/13.4 = 68%
CS3	13.4	15.6	13.4/15.6 = 86%
CS4	15.6	21.4	15.6/21.4 = 73%

c

500d-1

Coding Scheme (CS)	Minimum Data Rate (DR_{min}) Kbps	Maximum Data Rate (DR_{max}) Kbps	Normalized Minimum Throughput (S_{min})	Normalized Maximum Throughput (S_{max})
CS1	1.0	9.05	1.0/9.05 = 11%	95%
CS2	9.05	13.4	9.05/13.4 = 68%	95%
CS3	13.4	15.6	13.4/15.6 = 86%	95%
CS4	15.6	21.4	15.6/21.4 = 73%	95%

d

(57) Abstract: The instant invention provides a method and apparatus for efficiently selecting an optimal channel coding scheme from a plurality of successively higher order channel coding schemens (500) that are utilized over a packetized radio link in a wireless communication system. In a wireless system that utilizes packet switching, a more efficient and robust link can be maintained by dynamically selecting an optimal channel coding scheme best suited for the instantaneous conditions that exist on the radio link. The minimum data rate (500b-1) corresponding to a specified maximum data rate (500a-1) for a given channel coding scheme is determined. A normalized minimum throughput (500c-1) and its corresponding normalized maximum throughput (500d-1) for each channel coding scheme are determined based on the maximum data rate for the specified coding scheme. The optimal channel coding then determined based on whether an instantaneous measured throughput falls within the range of permitted throughput specified by the normalized minimum and maximum throughout for the current channel coding scheme used on the channel.

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A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : H04J 3/22; H04L 12/26; H04B 15/00; H04Q 7/38
US CL : 370/465; 455/62, 436, 452;
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. : 375/222; 370/252, 465; 455/62, 405, 436, 450, 452;

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
ANDY DORNAN, The Essential Guide to Wireless Communications Applications

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST search terms: measure, measurement, data throughput, GPRS, packet, coding, DSP, processor

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 6,167,031 A (OLOFSSON et al) 26 December 2000 (26.12.2000), Fig.8, col.1 lines 43-54, col.3 lines 50-59, col.4 lines 14-65, col.7 lines 55-59, col.8 lines 18-35, col.9 line 49 - col.10 line 7, col.10 lines 53-65, col.11 lines 48-55, and col.11 line 63 - col.12 line 17.	1-18
X	US 5,577,087 A (FURUYA) 19 November 1996 (19.11.1996), col.2 lines 8-16, and col.3 line 56 - col.4 line 13.	1, 2, 10, 11
X --- Y	US 5,533,004 A (JASPER et al) 02 July 1996 (02.07.1996), col.1 line 50 - col.2 line 9, col.4 lines 25-33, col.6 lines 1-18, col.7 lines 28-35, and Fig.3.	1-8, 10-17 --- 9, 18
Y	US 4,887,265 A (FELIX) 12 December 1989 (12.12.1989), col.1 lines 38-47, col.7 lines 3-17, col.9 line 65 - col.10 line 68, and Fig.7.	1-9, 18
Y	WO 96/10305 A2 (HAMALAINEN, et al.) 04 April 1996 (04.04.1996), p.1 line 31 - p.2 line 28, p.4 line 1 - p.5 line 10, and p.11 lines 23-34.	1-9
X,E --- Y,E	US 6,330,288 B1 (BUDKA et al) 11 December 2001 (11.12.2001), col.1 line 54 - col.2 line 42, col.3 lines 8-37, col.4 lines 6-14, and Fig.3.	1, 2, 10, 11 --- 3-9, 12-18

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International application No.
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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	US 5,649,299 A (BATTIN et al) 15 July 1997 (15.07.1997), col.1 lines 45-65, col.2 lines 47-65, and Figs.5-8.	1-18
A,P	US 6,208,663 B1 (SCHRAMM et al) 27 March 2001 (27.03.2001), col.1 lines 57-63, col.3 lines 31-40, and col.4 lines 3-11.	1-18
A,P	US 6,272,353 B1 (DICKER et al) 07 August 2001 (07.08.2001), col.7 lines 15-51.	1-18
A,P	US 6,240,275 B1 (H'MIMY et al) 29 May 2001 (29.05.2001), col.2 line 44 - col.3 line 15.	1-18