



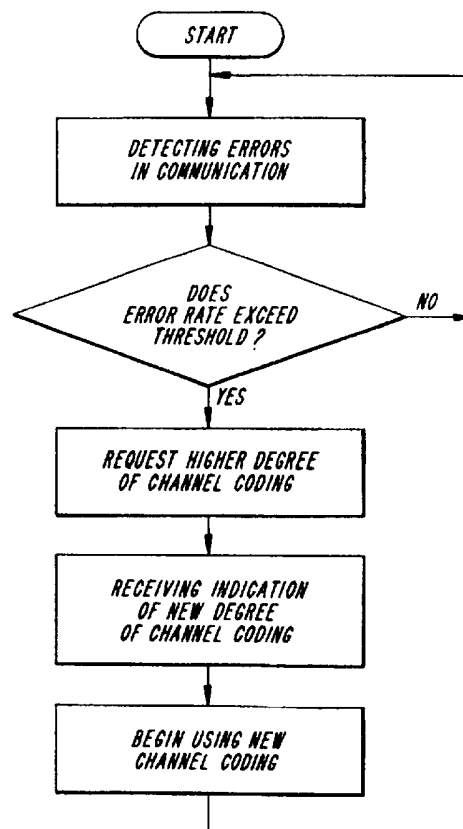
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>6</sup> : <b>H04L 1/12, 1/24, 5/14</b></p>	<p><b>A3</b></p>	<p>(11) International Publication Number: <b>WO 97/15131</b> (43) International Publication Date: 24 April 1997 (24.04.97)</p>
<p>(21) International Application Number: PCT/US96/16675 (22) International Filing Date: 18 October 1996 (18.10.96) (30) Priority Data: 08/544,491 18 October 1995 (18.10.95) US (71) Applicants: TELEFONAKTIEBOLAGET LM ERICSSON [SE/SE]; S-126 25 Stockholm (SE). ERICSSON INC. [US/US]; 7001 Development Drive, P.O. Box 13969, Research Triangle Park, NC 27709 (US). (72) Inventor: RAITH, Alex, Krister; 805-A5 Park Ridge Road, Durham, NC 27713 (US). (74) Agents: GRUDZIECKI, Ronald, L. et al.; Burns, Doane, Swecker &amp; Mathis, L.L.P., P.O. Box 1404, Alexandria, VA 22313-1404 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 5 June 1997 (05.06.97)</p>	

(54) Title: METHOD FOR IMPROVING THE EFFICIENCY OF TRANSMISSION IN MOBILE NETWORKS

(57) Abstract

A method for indicating a change in coding rate is disclosed so as to maintain synchronization between a communication system and a mobile station. A mobile station can request either to increase or decrease the degree of channel coding. The system can grant the request and send an indication to the mobile station indicating the new degree of coding. The indication is provided outside the field in which the coding rate is going to be changed. A modulation symbol alphabet can also be changed.



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INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 96/16675

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 H04L1/12 H04L1/24 H04L5/14

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 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	EP 0 627 827 A (CSELT; PHILIPS) 7 December 1994 see abstract see page 2, line 4 - line 6 see page 2, line 48 - line 58 see page 3, line 47 - line 51 see page 3, line 56 - line 58 see page 4, line 4 - line 7 see page 4, line 24 - line 30	1-5
A	--- -/--	6-12

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

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Date of the actual completion of the international search

15 April 1997

Date of mailing of the international search report

24. 04. 97

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## INTERNATIONAL SEARCH REPORT

 International Application No  
 PCT/US 96/16675

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 188 271 A (OKI ELECTRIC INDUSTRY) 23 July 1986 see abstract see page 1, line 16 - line 19 see page 2, line 21 - line 27 see page 3, line 1 - line 6 see page 3, line 12 - line 24 see page 9, line 7 - line 13 see page 13, line 24 - page 14, line 15 see page 19, line 21 - page 20, line 6	1-5
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X	WO 90 06637 A (CODEX) 14 June 1990 see abstract see page 3, line 20 - line 26 see page 4, line 9 - line 21 see page 5, line 33 - page 6, line 1 see page 15, line 27 - line 33	6-12
A	--- -/--	1-5

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## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 96/16675

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 93 00751 A (MICROCOM SYSTEMS) 7 January 1993 see page 5, line 3 - line 7 see page 7, line 3 - line 7 see page 9, line 33 - page 10, line 1 see page 10, line 29 - page 11, line 2 see page 13, line 2 - line 6 see page 15, line 18 - line 36	6-12
A	---	1-5
X	IEICE TRANSACTIONS ON COMMUNICATIONS, vol. E77-B, no. 9, September 1994, TOKYO JP, pages 1096-1103, XP000474107 SAMPEI ET AL.: "Adaptive modulation/TDMA scheme for large capacity personal multi-media communication system" see abstract see figures 2,3 see page 1097, left-hand column, paragraph 3 see page 1097, right-hand column, paragraph 5	6-12
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X	PROCEEDINGS OF THE VEHICULAR TECHNOLOGY CONFERENCE, 25 - 28 July 1995, NEW YORK, US, pages 306-310, XP000550184 UE ET AL.: "Symbol rate and modulation level controlled adaptive modulation/TDMA/TDD for personal communications systems" see abstract see page 306, left-hand column, paragraph 4 see page 306, right-hand column, paragraph 2	6-12
A	see page 309, left-hand column, paragraph 1 - paragraph 3	1-5
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 96/16675

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>PROCEEDINGS OF THE VEHICULAR TECHNOLOGY CONFERENCE,                      25 - 28 July 1995, NEW YORK, US,                      pages 221-225, XP000550167                      KAMIO ET AL.: "Performance of modulation-level-controlled adaptive-modulation under limited transmission delay time for land mobile communications"                      see abstract                      see page 221, right-hand column, paragraph 4 - page 222, left-hand column, paragraph 1                      see figure 2</p>	6-12
A	<p>-----</p>	1-5

# INTERNATIONAL SEARCH REPORT

International application No.

PL 2/US 96/16675

## 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 1-5: Adjustment of the degree of channel coding.
2. Claims 6-12: Adjustment of the modulation symbol alphabet.

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 searched 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

International Application No

PCT/US 96/16675

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WO 9300751 A	07-01-93	US 5241565 A	31-08-93



# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 96/16675

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9300751 A		AU 2295292 A	25-01-93