PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 :		(11) International Publication Number:	WO 00/33501
H04L 1/12, 27/00	A3	(43) International Publication Date:	8 June 2000 (08.06.00)

(21) International Application Number: PCT/FI99/00952

(22) International Filing Date: 17 November 1999 (17.11.99)

(30) Priority Data:
982479 17 November 1998 (17.11.98) FI

(71)(72) Applicants and Inventors: LALLO, Pauli [FI/FI]; Varuskunta 45 as 8, FIN–11310 Riihimäki (FI). PELTONIEMI, Pekka [FI/FI]; Suvelantie 8 A 36, FIN–02760 Espoo (FI). SEKKI, Mauri [FI/FI]; PL 80, FIN–02771 Espoo (FI). TERVAPURO, Ilpo [FI/FI]; Holvikuja 1 B 54, FIN–02770 Espoo (FI).

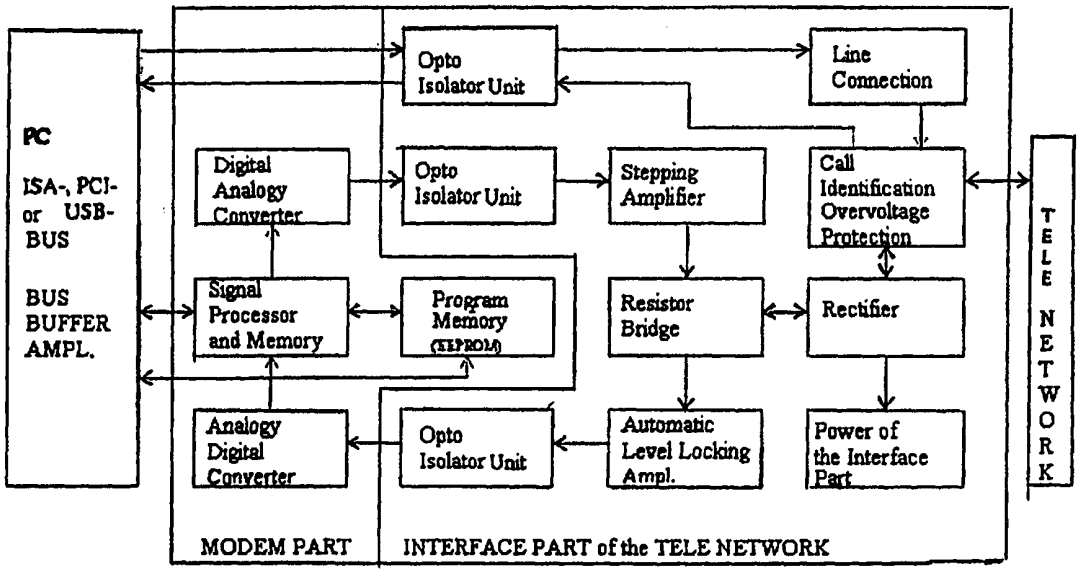
(74) Agent: NIEMINEN, Taisto; Patenttitoimisto T Nieminen Oy, Kehräsaari B, FIN–33200 Tampere (FI).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, 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, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
With international search report.
In English translation (filed in Finnish).

(88) Date of publication of the international search report:
10 August 2000 (10.08.00)

(54) Title: ADAPTIVE MODEM AND METHOD FOR ADAPTIVE ELECTION OF MODULATION MODE



(57) Abstract

Adaptive modem including modem part which comprises a transmitter and a receiver using digital signal processing and a control unit needed for the control of the modem functions, interface for the telecommunication network, where we have interfaces for the telecommunication network, and the signal amplification and waveform shaping units needed in transmission and receiving process, and the computer bus interface. Digital signal processing includes the calculation algorithms of an application of Fourrier Transform, where the transmitter and receiver functions are made with the algorithms mentioned optimally adaptive to the transmission speed, bit error and/or bandwidth of the available communication channel.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	**ES**	Spain	**LS**	Lesotho	**SI**	Slovenia
AM	Armenia	**FI**	Finland	**LT**	Lithuania	**SK**	Slovakia
AT	Austria	**FR**	France	**LU**	Luxembourg	**SN**	Senegal
AU	Australia	**GA**	Gabon	**LV**	Latvia	**SZ**	Swaziland
AZ	Azerbaijan	**GB**	United Kingdom	**MC**	Monaco	**TD**	Chad
BA	Bosnia and Herzegovina	**GE**	Georgia	**MD**	Republic of Moldova	**TG**	Togo
BB	Barbados	**GH**	Ghana	**MG**	Madagascar	**TJ**	Tajikistan
BE	Belgium	**GN**	Guinea	**MK**	The former Yugoslav Republic of Macedonia	**TM**	Turkmenistan
BF	Burkina Faso	**GR**	Greece			**TR**	Turkey
BG	Bulgaria	**HU**	Hungary	**ML**	Mali	**TT**	Trinidad and Tobago
BJ	Benin	**IE**	Ireland	**MN**	Mongolia	**UA**	Ukraine
BR	Brazil	**IL**	Israel	**MR**	Mauritania	**UG**	Uganda
BY	Belarus	**IS**	Iceland	**MW**	Malawi	**US**	United States of America
CA	Canada	**IT**	Italy	**MX**	Mexico	**UZ**	Uzbekistan
CF	Central African Republic	**JP**	Japan	**NE**	Niger	**VN**	Viet Nam
CG	Congo	**KE**	Kenya	**NL**	Netherlands	**YU**	Yugoslavia
CH	Switzerland	**KG**	Kyrgyzstan	**NO**	Norway	**ZW**	Zimbabwe
CI	Côte d'Ivoire	**KP**	Democratic People's Republic of Korea	**NZ**	New Zealand		
CM	Cameroon			**PL**	Poland		
CN	China	**KR**	Republic of Korea	**PT**	Portugal		
CU	Cuba	**KZ**	Kazakstan	**RO**	Romania		
CZ	Czech Republic	**LC**	Saint Lucia	**RU**	Russian Federation		
DE	Germany	**LI**	Liechtenstein	**SD**	Sudan		
DK	Denmark	**LK**	Sri Lanka	**SE**	Sweden		
EE	Estonia	**LR**	Liberia	**SG**	Singapore		

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 99/00952

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04L 1/12, H04L 27/00
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)

IPC7: H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, 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 0828363 A2 (TEXAS INSTRUMENTS INCORPORATED), 11 March 1998 (11.03.98), page 9, line 5 - page 10, line 14; page 3, line 9 - line 24 ---	1-6
X	"OFDM and related methods for broadband mobile radio channels", Czylwik, A.: 1998 International Zurich Seminar on Broadband Communications, 1998.Accessing, Transmission, Networking. Proceedings., Pages 91-98, see especially section 3. Conference date 17-19 February 1998 ---	1-6

[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" erlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"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
15 May 2000	23 -05- 2000
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Peder Gjervaldsaeter/AE Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 99/00952

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 0820168 A2 (TEXAS INSTRUMENTS INCORPORATED), 21 January 1998 (21.01.98), page 3, line 9 - line 32; page 9, line 11 - page 10, line 22	1-6
	--	
X	US 5063574 A (P.H. MOOSE), 5 November 1991 (05.11.91), column 6, line 40 - line 59; column 19, line 37 - line 68, figure 13	1-6
	--	
X	US 5715277 A (R.L. GOODSON ET AL.), 3 February 1998 (03.02.98), column 4, line 26 - line 63; column 10, line 31 - column 12, line 15	1-6
	--	
A	US 5764699 A (M.L. NEEDHAM ET AL.), 9 June 1998 (09.06.98), column 4, line 33 - column 6, line 60	1-6
	--	

INTERNATIONAL SEARCH REPORT

Information on patent family members

02/12/99

International application No.
PCT/FI 99/00952

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0828363 A2	11/03/98	JP 10126819 A	15/05/98
EP 0820168 A2	21/01/98	JP 10154949 A	09/06/98
US 5063574 A	05/11/91	AU 7551591 A	10/10/91
		CA 2054906 A	07/09/91
		EP 0471069 A	19/02/92
		US 5166924 A	24/11/92
		WO 9114316 A	19/09/91
US 5715277 A	03/02/98	NONE	
US 5764699 A	09/06/98	NONE	