(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
30 May 2002 (30.05.2002)

PCT

(10) International Publication Number
WO 02/043266 A3

(51) International Patent Classification[7]: H04B 1/707

(21) International Application Number: PCT/US01/32335

(22) International Filing Date: 16 October 2001 (16.10.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/723,152 27 November 2000 (27.11.2000) US

(71) Applicant *(for all designated States except US)*: ERICSSON INC. [US/US]; 511 Davis Drive, Reasearch Triangle Park, NC 27709 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: SOUROUR, Essam [EG/US]; 6185 Paseo Del Norte #200, Carlsbad, CA 92009 (US).

(74) Agents: BENNETT, David, E. et al.; Coats & Bennett, PLLC, P.O. Box 5, Raleigh, NC 27602 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, 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, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

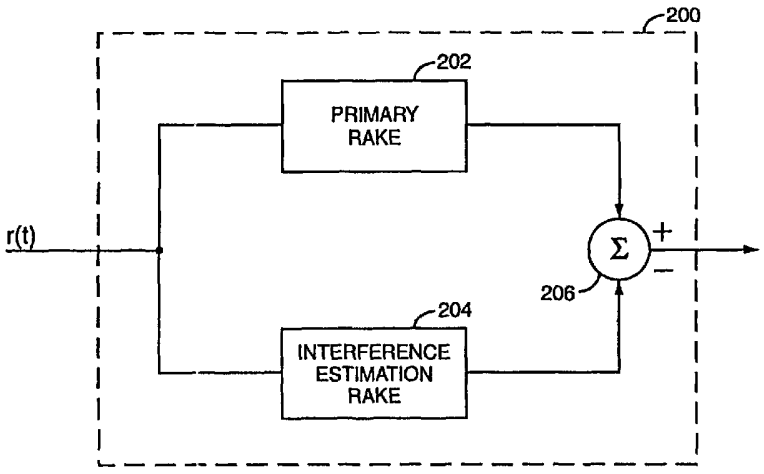
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(88) Date of publication of the international search report:
13 November 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MULTIPATH INTERFERENCE REDUCTION FOR A CDMA SYSTEM



(57) Abstract: A method and system reduce multipath signal interference in a CDMA receiver. The CDMA receiver comprising parallel first and second RAKE receivers receives a multipath signal. The first RAKE receiver includes a number of individual RAKE fingers, each operating with a defined finger delay matched to a propagation path delay. The output signal from each RAKE finger includes multipath interference. The second RAKE receiver includes a group of RAKE fingers corresponding to each RAKE finger in the first RAKE receiver. Each group of RAKE fingers is configured to produce an estimate of the multipath interference in the output signal generated by the corresponding RAKE finger in the first RAKE receiver. The estimated multipath interference signals are scaled, and then subtracted from the RAKE finger outputs from the first RAKE receiver to reduce multipath interference. Scaling coefficients are adjusted to ensure that such subtraction effectively reduces multipath interference.

WO 02/043266 A3

INTERNATIONAL SEARCH REPORT

PCT/US 01/32335

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04B1/707

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 H04B

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, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 067 292 A (BRINK STEPHAN TEN ET AL) 23 May 2000 (2000-05-23) column 1, line 40 -column 2, line 25 claims 1-24 ---	1,6,16, 27
X	QUEE SENG QUEK ET AL: "Performance of blind adaptive receiver with decision directed steering vector" VEHICULAR TECHNOLOGY CONFERENCE, 1999 IEEE 49TH HOUSTON, TX, USA 16-20 MAY 1999, PISCATAWAY, NJ, USA,IEEE, US, 16 May 1999 (1999-05-16), pages 1246-1250, XP010342079 ISBN: 0-7803-5565-2 abstract section II. B., page 1247, left col. - page 1248 right column. figure 1 --- -/--	16,27

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

[X] Patent family members are listed in 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" earlier 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
12 July 2002	19/07/2002

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	Ó Donnabháin, E

Form PCT/ISA/210 (second sheet) (July 1992)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	LEE T-S ET AL: "A PARTIALLY ADAPTIVE CDMA INTERFERENCE CANCELLER FOR MULIPATH CHANNELS" VTC 2000-SPRING. 2000 IEEE 51ST. VEHICULAR TECHNOLOGY CONFERENCE PROCEEDINGS. TOKYO, JAPAN, MAY 15-18, 2000, IEEE VEHICULAR TECHNOLGY CONFERENCE, NEW YORK, NY: IEEE, US, vol. 2 OF 3. CONF. 51, 15 May 2000 (2000-05-15), pages 917-921, XP000968003 ISBN: 0-7803-5719-1 abstract section III., page 918, left col. - page 919, right col. figure 1 ---	1-32
A	JOHANSSON A-L ET AL: "A HYBRID INTERFERENCE CANCELLATION SCHEME FOR MULTIUSER SYSTEMS IN MULTIPATH FADING CHANNELS" EUROPEAN TRANSACTIONS ON TELECOMMUNICATIONS, EUREL PUBLICATION, MILANO, IT, vol. 11, no. 2, March 2000 (2000-03), pages 207-217, XP000949772 ISSN: 1124-318X abstract section 2.2, page 208-209 -----	1-32

INTERNATIONAL SEARCH REPORT

PCT/US 01/32335

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6067292 A	23-05-2000	US 6009089 A	28-12-1999
		EP 0876002 A2	04-11-1998
		JP 10327126 A	08-12-1998
		KR 263801 B1	16-08-2000