

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 April 2006 (27.04.2006)

PCT

(10) International Publication Number
WO 2006/044901 A3

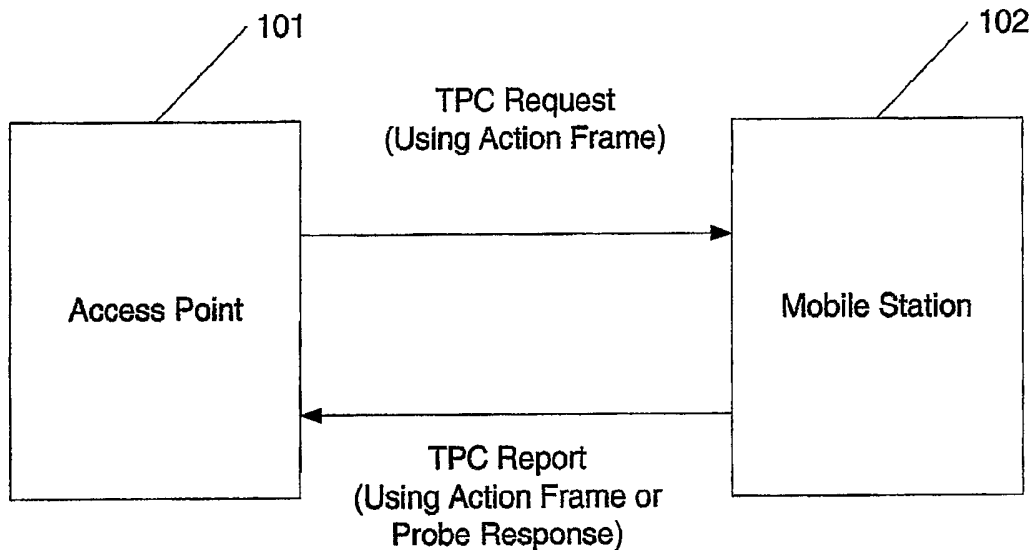
- (51) International Patent Classification:
H04B 7/005 (2006.01)
- (21) International Application Number:
PCT/US2005/037458
- (22) International Filing Date: 18 October 2005 (18.10.2005)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
10/968,244 20 October 2004 (20.10.2004) US
- (71) Applicants (for all designated States except US):
KABUSHIKI KAISHA TOSHIBA [JP/JP]; 1-1, Shibaura 1-chome, Minato-ku., Tokyo 105-8001 (JP).
TELCORDIA TECHNOLOGIES, INC. [US/US]; One Telecordia Drive 05G0116, Piscataway, NJ 08854-4157 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **MATSUO, Ryoko** [JP/US]; 408 Reading Circle, Bridgewater, NJ 08807 (US).
OBAYASHI, Shuichi [JP/US]; 2408 5th Street, Fort Lee, NJ 07024 (US). **KODAMA, Toshikazu** [JP/US]; 30 Cattano Avenue, Apartment 523, Morristown, NJ 07960 (US).
FAMOLARI, David [US/US]; 65 Fullerton Avenue, Apt. 25, Montclair, NJ 07042 (US).
- (74) Agent: **GLEMBOCKI, Christopher, R.**; Banner & Witcoff, Ltd., 1001 G Street, N.W., 11th Floor, Washington, DC 20001-4597 (US).

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

- Published:**
- with international search report
 - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report:
21 September 2006

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: TERMINAL TRANSMIT POWER CONTROL WITH LINK ADAPTATION



(57) Abstract: Methods for coordinating power usage and link adaptation in wireless communications are described. Terminals and/or access points (APs) may attempt to modify terminals' transmit power in relation to a desired communication data transfer rate. Link adaption may also be used in conjunction with the described methods.

WO 2006/044901 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2005/037458

A. CLASSIFICATION OF SUBJECT MATTER INV. H04B7/005		
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) H04B 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, 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 2003/039267 A1 (KOO CHANG-HOI ET AL) 27 February 2003 (2003-02-27) figure 5.a page 5, paragraph 65 - paragraph 68	1-6, 18-21
X	US 2003/104831 A1 (RAZAVILAR JAVAD ET AL) 5 June 2003 (2003-06-05) figure 3 paragraph [0049] paragraphs [0070] - [0086]	1-6, 18-21
X	US 2003/165190 A1 (SINDHUSHAYANA NAGABHUSHANA ET AL) 4 September 2003 (2003-09-04) paragraph [0066] - paragraph [0089]	1-6, 18-21
	-/--	
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.		
<input checked="" type="checkbox"/> 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* 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 <p style="text-align: center;">6 April 2006</p>		Date of mailing of the international search report <p style="text-align: center;">26. 07. 06</p>
Name and mailing address of the ISA/ 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		Authorized officer <p style="text-align: center;">Cabañas Prieto, A.M.</p>

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2005/037458

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>YOUNGSOO KIM ET AL: "SP-TCP: a self-protective energy efficient communication strategy for IEEE 802.11 WLANs" VEHICULAR TECHNOLOGY CONFERENCE, 2004. VTC2004-FALL. 2004 IEEE 60TH LOS ANGELES, CA, USA 26-29 SEPT. 2004, PISCATAWAY, NJ, USA, IEEE, 26 September 2004 (2004-09-26), pages 2078-2082, XP010787005 ISBN: 0-7803-8521-7 the whole document</p>	1-6, 18-21
A	<p>US 2003/003905 A1 (SHVODIAN WILLIAM M) 2 January 2003 (2003-01-02) paragraph [0058] - paragraph [0063]</p>	1-6, 18-21
A	<p>US 2002/105925 A1 (SHOEMAKE MATTHEW B) 8 August 2002 (2002-08-08) the whole document</p>	1-6, 18-21

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2005/037458

Box II Observations where certain claims were found unsearchable (Continuation of item 2 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 III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

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.:

1-6, 18-21

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6, 18-21

Claims 1 and 18 refer to a method and corresponding apparatus comprising the steps of determining a desired data rate, comparing said desired data rate to a current data rate and adjusting the transmit power to comport with a power consumption related to said desired data rate. These claims are directed to controlling the transmit power for a mobile terminal by performing link adaptation wherein the transmit power is set according to the allowable link data rate.

2. claims: 7-13,22-25

Claims 7 and 22 refer to a method and corresponding apparatus comprising the steps of determining whether a change has occurred in the antenna parameters of an access point, determining if a transmit power of a mobile terminal should be modified based on said change in the antenna parameters and modifying said transmit power in accordance with said determining steps. These claims are directed to controlling the transmit power for a mobile terminal in accordance with the antenna parameters of an access point.

3. claims: 14-17,26-30

Claims 14 and 26 refer to a method and corresponding apparatus comprising the steps of determining if a change in data rate has occurred, comparing said current data rate to a previous data rate and modifying the transmit power of a mobile terminal when said comparing step indicates a change in rate greater than or equal to a predetermined rate change level. These claims are directed to controlling the transmit power for a mobile terminal in accordance with the current data rate in a variable multi-rate system.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2005/037458

Patent document cited in search report	Publication date	Publication date	Patent family member(s)	Publication date
US 2003039267	A1	27-02-2003	NONE	
US 2003104831	A1	05-06-2003	AU 2002346460 A1 CN 1613198 A WO 03049318 A1	17-06-2003 04-05-2005 12-06-2003
US 2003165190	A1	04-09-2003	AU 2003234882 A1 BR 0308216 A CA 2476060 A1 CN 1640008 A EP 1481495 A1 JP 2005527137 T MX PA04008459 A WO 03077444 A1	22-09-2003 10-05-2005 18-09-2003 13-07-2005 01-12-2004 08-09-2005 06-12-2004 18-09-2003
US 2003003905	A1	02-01-2003	NONE	
US 2002105925	A1	08-08-2002	NONE	