

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
17 March 2005 (17.03.2005)

PCT

(10) International Publication Number
WO 2005/025078 A3

(51) International Patent Classification:

H04B 7/15 (2006.01) *H04J 3/06* (2006.01)
H04B 1/38 (2006.01) *H04L 12/28* (2006.01)
H04B 7/216 (2006.01)

(21) International Application Number:

PCT/US2004/029123

(22) International Filing Date:

3 September 2004 (03.09.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/499,693 3 September 2003 (03.09.2003) US

(71) Applicant and

(72) Inventor: **MOHEBBI, Behzad** [GB/US]; 2480 Irvine Blvd., Apt. 349, Tustin, CA 92782 (US).

(74) Agents: **KOESTNER, Ken J.** et al.; KOESTNER BERTANI LLP, 18662 MacArthur Blvd., Suite 400, Irvine, CA 92612 (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, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, 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, IT, LU, 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:

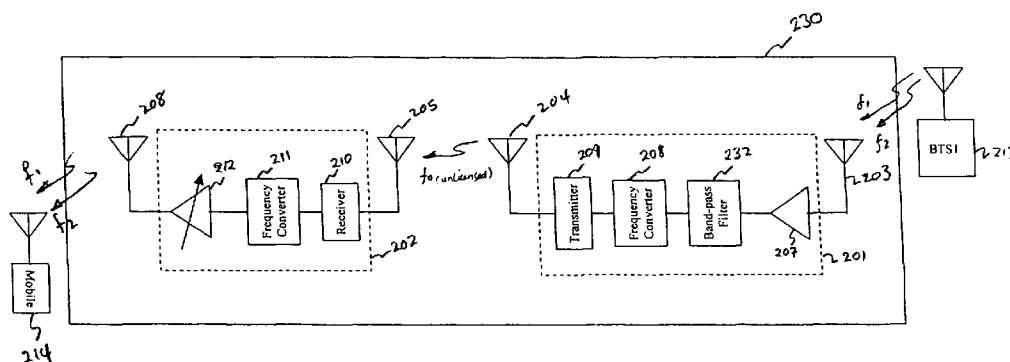
- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:

23 October 2008

(54) Title: SHORT-RANGE CELLULAR BOOSTER

200



(57) Abstract: A repeater mediates traffic between a network transceiver and a user transceiver in a wireless communication system. The repeater comprises a network unit that maintains a network link with the network transceiver, a user unit that maintains a user link with the user transceiver, a two-way communication pathway between the network unit and the user unit; that facilitate the communication of signals between the network transceiver and the network unit, between the user transceiver and the user unit, and between the network unit and the user unit, and a gain controller that compensates for propagation losses between the network unit and user unit alone.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/29123

A. CLASSIFICATION OF SUBJECT MATTER

IPC: H04B 7/15(2006.01);1/38(2006.01);7/216(2006.01);H04J 3/06(2006.01);H04L 12/28(2006.01)

USPC: 455/11.1,41.2,571;370/254,400,315,342;379/348

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. : 455/11.1, 41.2, 571; 370/254, 400, 315, 342; 379/348

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 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-P ---	US 2006/0046642 A1 (BASSIRI et al) 02 March 2006 (02-03.2006), see entire documents.	1-32
Y ---	US 2002/0115409 A1 (KHAYRALLAH) 22 August 2002 (22.08.2002), see entire documents.	65-96
Y-P ---	US. 2005/0176452 A1 (PERLMAN) 11 August 2005 (11.08.2005), see entire documents.	97-127
A ---		33-64
A	US 5,875,179 (TIKALSKY) 23 February 1999 (23.02.1999), see entire documents.	33-64



Further documents are listed in the continuation of Box C.



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 application or patent 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

28 May 2008 (28.05.2008)

Date of mailing of the international search report

21 AUG 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner of Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

IAN TRINH

Telephone No. 571-272-7888

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/29123

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim 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. ☐ Claim 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:
Please See Continuation 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.:

Remark on Protest

☐
☐

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

No protest accompanied the payment of additional search fees.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group I, (claims 1-32), drawn to autonomous repeater hops between the network transceiver and network unit, between user transceiver and the user unit and using gain controller that compensates for propagation losses between the network unit and user unit alone, classified in class 455, subclass 11.1 and 16 (H04B 7-15).

Group II, (claims 33-64), drawn to autonomous repeater hops between the network transceiver and network unit, between user transceiver and the user unit and using an echo canceller in each of the network and user units that mutually isolates the network unit and the user unit and operates in a frequency band of a boosted signal, classified in class 455, subclass 63.1 and 67.13 (H04B 17/00).

Group III, (claims 65-96), drawn to autonomous repeater hops between the network transceiver and network unit, between user transceiver and the user unit and using the autonomous repeater hop between the network unit and the user unit being tuned to operate at an Unlicensed National Information Infrastructure (known as U-NII) spectrum frequency band, tuned to operate at an Unlicensed Personal Communications Services (U-PCS) spectrum frequency band, or tuned to operate at an Industrial, Scientific and Medical (ISM) spectrum frequency band, classified in class 455, subclass 17 and 41.2 (H04B 17/00).

Group VI, (claims 97-127), drawn to autonomous repeater hops between the network transceiver and network unit, between user transceiver and the user unit and using dedicated data and control links in the communication pathway between the network unit and the user unit carried on electric wires or telephone lines, classified in class 379, subclass 348 (H04M 1/00).