

(51) International Patent Classification:
H04B 7/26 (2006.01)(21) International Application Number:
PCT/MY2008/000152(22) International Filing Date:
24 November 2008 (24.11.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PI20072066 22 November 2007 (22.11.2007) MY(71) Applicants (for all designated States except US): **MIMOS BERHAD** [MY/MY]; Technology Park Malaysia, 57000 Kuala Lumpur (MY). **UNIVERSITI PUTRA MALAYSIA** [MY/MY]; 43400 Serdang, Selangor (MY).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **RASHID, Abdel-haleem, Saeed** [SD/MY]; Mimos Berhad, Technology Park Malaysia, 57000 Kuala Lumpur (MY). **BORHANUDDIN, Bin, Mohd, Ali** [MY/MY]; Mimos Berhad, Technology Park Malaysia, 57000 Kuala Lumpur (MY). **HAFIZAL, Mohamad** [MY/MY]; Mimos Berhad, Technology Park Malaysia, 57000 Kuala Lumpur (MY). **NG, Chee, Kyun** [MY/MY]; Computer and Communication System Engineering Dept Engineering Faculty, Universiti Putra Malaysia, 43300 Serdang, Selangor (MY).(74) Agent: **TAN, Boon, Leng**; Boon IP Enterprise, D-8-8 Seri Puri, Jln Aman, 52100 Kuala Lumpur (MY).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

Published:

— with international search report (Art. 21(3))
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))(88) Date of publication of the international search report:
13 August 2009

(54) Title: CAPACITY ENHANCEMENT IN WIMAX MESH NETWORK

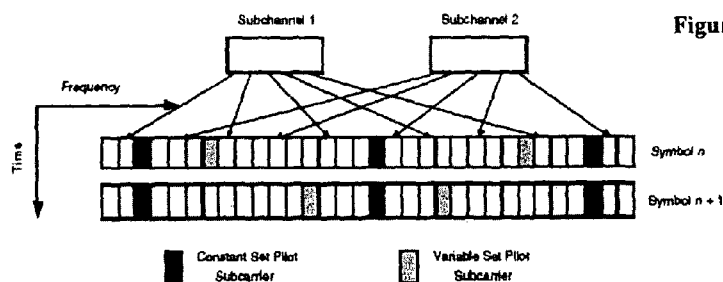


Figure 3

(57) Abstract: Capacity has become of primary importance in WiMAX mesh networks (WMN) due to the ever increasing demand for multimedia services and the possibility of providing high speed wireless Internet. The major factor limiting capacity in such systems is interference originating from adjacent nodes, namely co-channel interference. The present invention is generally an analysis of co-channel interference for a spectrally efficient WMN configuration. A new channel allocation algorithm is proposed by using smart antenna system to eliminate the co-channel interference. This algorithm considers the number of subchannels in the OFDM spectrum in order to increase the system capacity. The new algorithm is designed to avoid the same subchannel of OFDM spectrum to be allocated in adjacent nodes. The system capacity can be increased when the co-channel interference is reduced.

A. CLASSIFICATION OF SUBJECT MATTER**H04B 7/26(2006.01)i**

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: H04B H04Q H04W H01Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
KOREAN UTILITY MODELS AND APPLICATIONS FOR UTILITY MODELS SINCE 1975
JAPANESE UTILITY MODELS AND APPLICATIONS FOR UTILITY MODELS SINCE 1975Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKIPASS (KIPO internal), IEEEExplore**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	W. MAHLER et al., "Design and Optimisation of an Antenna Array for WIMAX Base Stations", Wireless Communications and Applied Computational Electromagnetics, 2005. IEEE/ACES International Conference on, 3-7 April 2005 Pages 1006 - 1009	1 - 10
Y	VANDANA SINGH et al., "Efficient and Fair Scheduling of Uplink and Downlink in IEEE 802.16 OFDMA Networks", Wireless Communications and Networking Conference, 2006. WCNC 2006. IEEE, Volume 2, 3-6 April 2006 Pages 984 - 990	1 - 10
Y	US 2007/0205955 A1 (KORISCH et al.) 6 September 2007 See Abstract, Fig. 1, paragraphs [0029] - [0030]	1 - 10



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 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 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

29 JUNE 2009 (29.06.2009)

Date of mailing of the international search report

29 JUNE 2009 (29.06.2009)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

NA, Yong Soo

Telephone No. 82-42-481-8456



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/MY2008/000152Patent document
cited in search reportPublication
datePatent family
member(s)Publication
date

US 2007/0205955 A1

06.09.2007

US 7538740 B2

26.05.2009