

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
7 October 2010 (07.10.2010)

PCT

(10) International Publication Number  
**WO 2010/114269 A3**

(51) International Patent Classification:  
**H04B 7/06** (2006.01)

(74) Agent: **YANG, Moon Ock**; S&IP Patent & Law Firm,  
2F. Samheung Yeoksam Bldg., 735-10 Yeoksam-dong,  
Gangnam-gu, Seoul 135-080 (KR).

(21) International Application Number:  
PCT/KR2010/001907

(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, CL, 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, 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, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(22) International Filing Date:  
30 March 2010 (30.03.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
61/164,885 30 March 2009 (30.03.2009) US  
10-2010-0024043 18 March 2010 (18.03.2010) KR

(71) Applicant (for all designated States except US): **LG ELECTRONICS INC.** [KR/KR]; 20, Yeouido-dong, Yeongdeungpo-gu, Seoul 150-721 (KR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LEE, Moon Il** [KR/KR]; LG R&D Complex, 533, Hoge 1-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR). **LEE, Wook-bong** [KR/KR]; LG R&D Complex, 533, Hoge 1-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR). **KOO, Jaho** [KR/KR]; LG R&D Complex, 533, Hoge 1-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR). **KO, Hyunsoo** [KR/KR]; LG R&D Complex, 533, Hoge 1-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR). **CHUNG, Jae Hoon** [KR/KR]; LG R&D Complex, 533, Hoge 1-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR). **IHM, Bin Chul** [KR/KR]; LG R&D Complex, 533, Hoge 1-dong, Dongan-gu, Anyang-si, Gyeonggi-do 431-749 (KR).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, 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, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

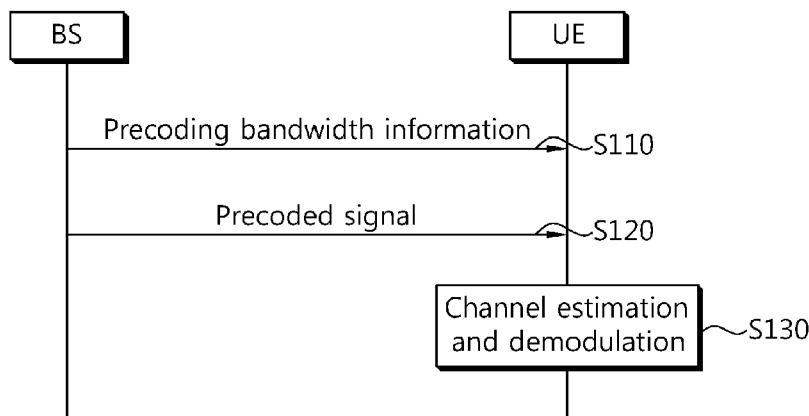
Published:

- 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 January 2011

(54) Title: METHOD AND APPARATUS FOR TRANSMITTING SIGNAL IN WIRELESS COMMUNICATION SYSTEM

[Fig. 18]



(57) Abstract: A method and apparatus for transmitting a signal in a wireless communication system are provided. The method includes: generating R spatial streams each of which is generated on the basis of an information stream and a reference signal; generating N transmit streams on the basis of the R spatial streams and a precoding matrix (where R<N); mapping the N transmit streams to at least one resource block; and generating N signals from the N transmit streams mapped to the at least one resource block, and transmitting the N signals to a user equipment through respective antennas.

WO 2010/114269 A3

**A. CLASSIFICATION OF SUBJECT MATTER****H04B 7/06(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)

H04B 7/06; H04B 7/26; H04B 7/02; H04J 11/00; H04L 27/26; H04B 7/04

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

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: spatial, reference, transmit, stream, mapping, pre-coding, bandwidth, resource, block

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 10-2008-0094935 A (INTERDIGITAL TECHNOLOGY CORPORATION) 27 October 2008 See abstract, claim 1, 21, [0016]-[0023], [0051]-[0057] and figure 2.	1-9
A	KR 10-2008-0094056 A (LG ELECTRONICS INC.) 22 October 2008 See abstract, claim 1, 23 and [0045].	1-9
A	KR 10-2008-0091398 A (INTERDIGITAL TECHNOLOGY CORPORATION) 10 October 2008 See abstract, claim 1, 20 and [0012]-[0019], [0055]-[0064].	1-9
A	KR 10-2008-0083808 A (SAMSUNG ELECTRONICS CO.,LTD. et al.) 19 September 2008 See abstract and [0006]-[0011].	1-9

 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

17 NOVEMBER 2010 (17.11.2010)

Date of mailing of the international search report

**19 NOVEMBER 2010 (19.11.2010)**

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

YOO, Byung Chul

Telephone No. 82-42-481-8594



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/KR2010/001907**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 10-2008-0094935 A	27.10.2008	AU 2007-215314 A1	23.08.2007
		CA 2641973-A1	23.08.2007
		CN 101379748 A	04.03.2009
		EP 1994665 A1	26.11.2008
		JP 2009-526486 A	16.07.2009
		KR 10-2008-0091398 A	10.10.2008
		WO 2007-095102 A1	23.08.2007
KR 10-2008-0094056 A	22.10.2008	CN 101606339 A	16.12.2009
		EP 1982451 A2	22.10.2008
		JP 2009-529810 A	20.08.2009
		WO 2007-081181 A2	19.07.2007
		WO 2007-081181 A3	19.07.2007
KR 10-2008-0091398 A	10.10.2008	AU 2007-215314 A1	23.08.2007
		CA 2641973-A1	23.08.2007
		CN 101379748 A	04.03.2009
		EP 1994665 A1	26.11.2008
		JP 2009-526486 A	16.07.2009
		KR 10-0986106 B1	08.10.2010
		WO 2007-095102 A1	23.08.2007
KR 10-2008-0083808 A	19.09.2008	None	