

(43) International Publication Date
29 December 2010 (29.12.2010)(10) International Publication Number
WO 2010/149306 A3(51) International Patent Classification:
H04B 7/06 (2006.01)(21) International Application Number:
PCT/EP2010/003633(22) International Filing Date:
4 June 2010 (04.06.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09290481.2 23 June 2009 (23.06.2009) EP
09015516.9 15 December 2009 (15.12.2009) EP(71) Applicant (for all designated States except US): **ALCATEL LUCENT** [FR/FR]; 3, avenue Octave Greard, F-75007 Paris (FR).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **BAKER, Matthew, P., J.** [GB/GB]; 12 Fir Tree Close, Rough Common, Canterbury, CT2 9DB, Kent (GB).(74) Agents: **SARUP, David, Alexander** et al.; Alcatel-Lucent Telecom Ltd., Unit 18, Core 3, Workzone, Innova Business Park, Electric Avenue, Enfield EN3 7XU (GB).

(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, 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, 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.

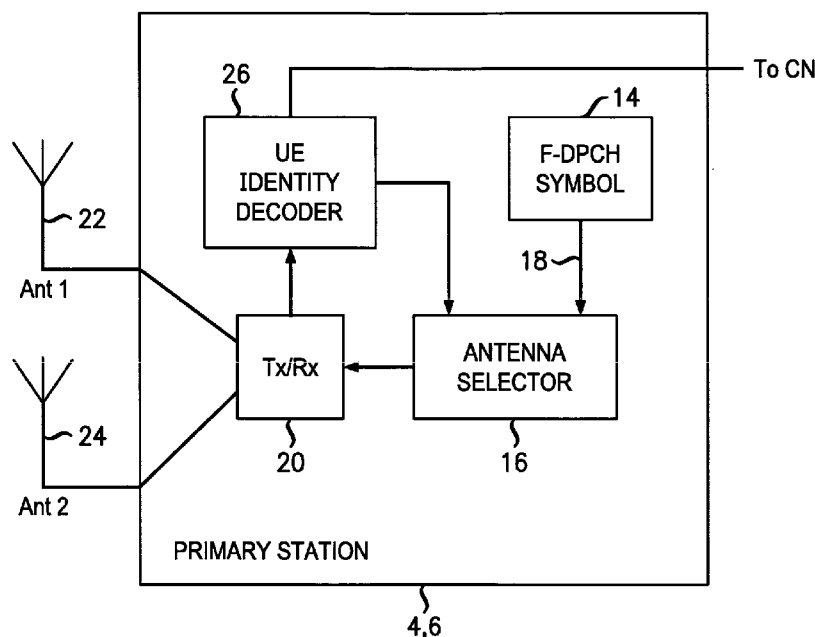
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, 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))

[Continued on next page]

(54) Title: A STATION COMPRISING AT LEAST TWO TRANSMIT ANTENNAS, AND A METHOD OF TRANSMITTING THEREFROM

**FIG. 2**

(57) Abstract: A method is provided of transmitting a plurality of signals from a primary station to a respective plurality of secondary stations, said primary station comprising at least two transmit antennas, wherein each of said plurality of signals is transmitted from a respective subset of said at least two transmit antennas to a respective secondary station, in which each subset is selected at least according to a predetermined characteristic of the respective secondary station.



-
- *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:**
24 March 2011

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/003633

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04B7/06
ADD.

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2004/248618 A1 (YOSHII ISAMU [JP] ET AL) 9 December 2004 (2004-12-09) * abstract paragraphs [0027] - [0033], [0 49], [0 50] claim 5 figures 1, 2 -----	1,2, 4-11,13 3,12
X A	US 2005/265225 A1 (MAHADEVAPPA RAVISHANKAR H [US] ET AL) 1 December 2005 (2005-12-01) * abstract paragraphs [0023], [0 27] - [0030] claims 1, 2, 7-9 figure 2 ----- -/-	1,2, 4-11,13 3,12



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 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

28 January 2011

Date of mailing of the international search report

04/02/2011

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Helms, Jochen

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/003633

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 6 898 441 B1 (KOGIANTIS ACHILLES GEORGE [US] ET AL) 24 May 2005 (2005-05-24) * abstract column 1, line 21 - column 2, line 64 figures 1-4	1,2, 4-11,13 3,12
X,P	----- ALCATEL-LUCENT: "Transmit Diversity solutions for F-DPCH", 3GPP DRAFT; R1-093337, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE, no. Shenzhen, China; 20090824, 24 August 2009 (2009-08-24), XP050388119, the whole document	1,10
X	----- "Universal Mobile Telecommunications System (UMTS); Physical channels and mapping of transport channels onto physical channels (FDD) (3GPP TS 25.211 version 8.4.0 Release 8); ETSI TS 125 211", ETSI STANDARD, EUROPEAN TELECOMMUNICATIONS STANDARDS INSTITUTE (ETSI), SOPHIA ANTIPOLIS CEDEX, FRANCE, vol. 3-R1, no. V8.4.0, 1 March 2009 (2009-03-01), XP014043960, page 31, paragraph 5.3.3.2	14,15
X	----- US 2005/053169 A1 (JIA MING [CA] ET AL JIA MING [CA] ET AL) 10 March 2005 (2005-03-10) * abstract paragraphs [0040], [0 63] - [0066], [0 68] figures 8, 10 -----	14,15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2010/003633

Box No. 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 No. 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 fees, this Authority did not invite payment of additional fees.
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 and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ 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: 1-13

Independent claim 1 relates to a method of transmitting from a primary station a plurality of signals to a corresponding plurality of secondary stations, said primary station comprising at least two transmit antennas, wherein each of said plurality of signals is transmitted from a respective subset of said at least two transmit antennas to a respective secondary station, in which each subset is selected dependent upon a predetermined characteristic of the respective secondary station.

Independent claim 10 relates to the corresponding primary station.

2. claims: 14, 15

Independent claim 14 relates to a telecommunications secondary station configured to determine from which antenna of a primary station comprising at least two transmit antennas a signal is received, the secondary station being operative to select for use in demodulation an expected phase reference in respect of the antenna determined.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2010/003633

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004248618	A1	09-12-2004	AU 2003242377 A1 06-01-2004
			CN 1640019 A 13-07-2005
			EP 1515456 A1 16-03-2005
			WO 2004002020 A1 31-12-2003
			JP 3751265 B2 01-03-2006
			JP 2004023716 A 22-01-2004

US 2005265225	A1	01-12-2005	NONE

US 6898441	B1	24-05-2005	DE 60107337 D1 30-12-2004
			DE 60107337 T2 08-12-2005
			EP 1187506 A1 13-03-2002
			JP 2002135204 A 10-05-2002

US 2005053169	A1	10-03-2005	WO 2005025085 A1 17-03-2005
			EP 1661263 A1 31-05-2006
