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- (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.
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(54) **Title:** RANK ADAPTATION FOR AN OPEN LOOP MULTI-ANTENNA MODE OF WIRELESS COMMUNICATION

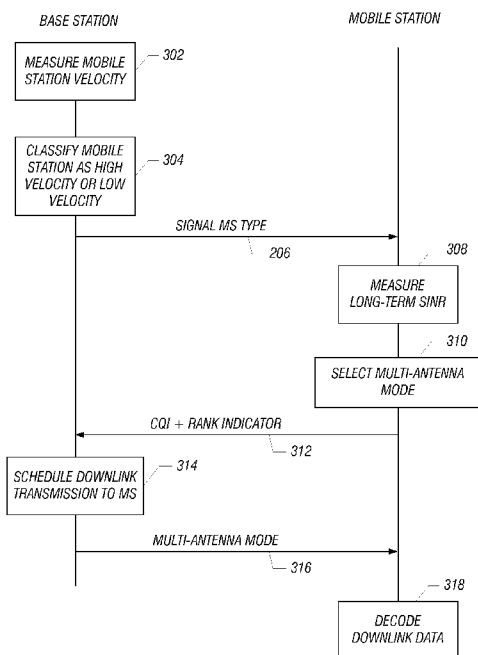


FIG. 3

(57) **Abstract:** To perform rank adaptation for a mobile station in a wireless network, it is determined whether the mobile station is fast moving. In response to determining that the mobile station is fast moving, an open loop multi-antenna mode is selected to perform wireless communication between the mobile station and a base station. Also, selection is made from among plural ranks for the wireless communication according to the open loop multi-antenna mode between the mobile station and the base station.

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**Declarations under Rule 4.17:**

- *as to the identity of the inventor (Rule 4.17(i))*
- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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**INTERNATIONAL SEARCH REPORT**

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<p>A. CLASSIFICATION OF SUBJECT MATTER                  IPC: <b>H04W 28/18</b> (2009.01) , <b>H04W 72/06</b> (2009.01)                  According to International Patent Classification (IPC) or to both national classification and IPC</p>													
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols)                  IPC: <b>H04W 28/18</b> (2009.01) , <b>H04W 72/06</b> (2009.01)</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)  <b>Database:</b> EPOQUE, Delphion, West, Espacenet, Canadian Patent Database (Intellect), QPAT, IEEE, Google.  <b>Keywords:</b> rank adaptation/velocity/high speed/fast moving/high mobility/open loop/mimo/codeword</p>													
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:10%;">Category*</th> <th style="width:60%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width:30%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td align="center">Y</td> <td>WO 2005/081444 A1 (KRASNY et al.) 1 September 2005 (01-09-2005) • entire document, in particular: abstract; page 2, lines 10 to 34; page 8, line 26 to page 9, line 26; page 12, line 22 to page 13, line 20 •</td> <td align="center">1-16</td> </tr> <tr> <td align="center">Y</td> <td>WO 2005/096531 A1 (TONG et al.) 13 October 2005 (13-10-2005) • entire document, in particular: page 14, lines 22 to 23 •</td> <td align="center">1-16</td> </tr> <tr> <td align="center">A</td> <td>US 2005/0243942 A1 (SAWAI) 3 November 2005 (03-11-2005) • entire document •</td> <td align="center">1-16</td> </tr> </tbody> </table>		Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	Y	WO 2005/081444 A1 (KRASNY et al.) 1 September 2005 (01-09-2005) • entire document, in particular: abstract; page 2, lines 10 to 34; page 8, line 26 to page 9, line 26; page 12, line 22 to page 13, line 20 •	1-16	Y	WO 2005/096531 A1 (TONG et al.) 13 October 2005 (13-10-2005) • entire document, in particular: page 14, lines 22 to 23 •	1-16	A	US 2005/0243942 A1 (SAWAI) 3 November 2005 (03-11-2005) • entire document •	1-16
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<p><input type="checkbox"/> Further documents are listed in the continuation of Box C.      <input checked="" type="checkbox"/> See patent family annex.</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; vertical-align: top;">                 * 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 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             </td> <td style="width:50%; vertical-align: top;">                 "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             </td> </tr> </table>		* 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 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										
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Date of the actual completion of the international search 26 June 2009 (26-06-2009)	Date of mailing of the international search report 7 July 2009 (07-07-2009)												
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001-819-953-2476	Authorized officer Xiaoyun Hu 819- 934-7569												

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