



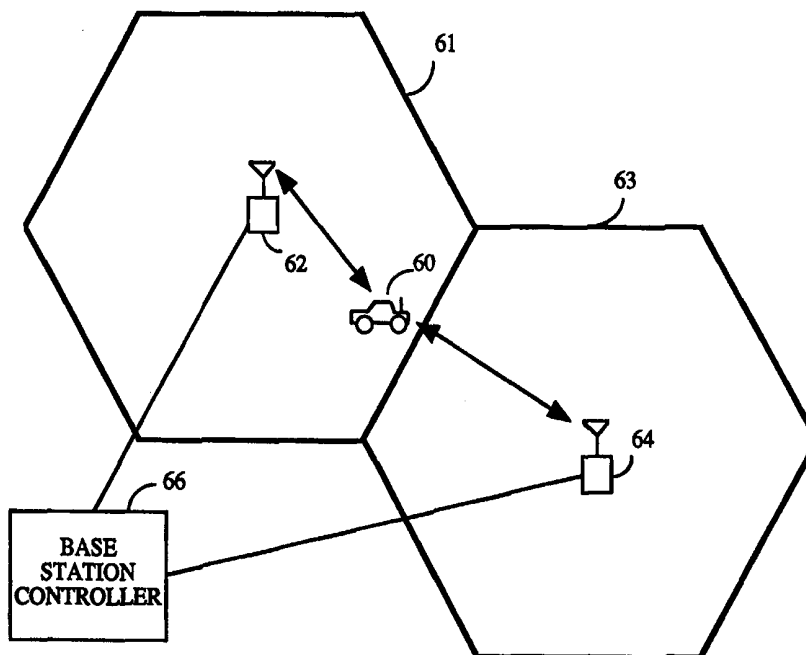
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <p>(51) International Patent Classification ⁶ : H04B 1/707, 7/26</p> | <p>A3</p> | <p>(11) International Publication Number: WO 99/16183 (43) International Publication Date: 1 April 1999 (01.04.99)</p> |
| <p>(21) International Application Number: PCT/US98/19467 (22) International Filing Date: 18 September 1998 (18.09.98) (30) Priority Data: 08/933,888 19 September 1997 (19.09.97) US (71) Applicant: QUALCOMM INCORPORATED [US/US]; 6455 Lusk Boulevard, San Diego, CA 92121 (US). (72) Inventors: WHEATLEY, Charles, E., III; 2208 Caminito Del Barco, Del Mar, CA 92014 (US). TIEDEMANN, Edward, G., Jr.; 4350 Bromfield Avenue, San Diego, CA 92122 (US). (74) Agents: MILLER, Russell, B. et al.; Qualcomm Incorporated, 6455 Lusk Boulevard, San Diego, CA 92121 (US).</p> | <p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 3 June 1999 (03.06.99)</p> | |

(54) Title: MOBILE STATION ASSISTED TIMING SYNCHRONIZATION IN A CDMA COMMUNICATION SYSTEM

(57) Abstract

In the present invention, the slave base station (64) attains synchronization with the reference base station (62) through messages transmitted from and received by a mobile station (60) in the soft handoff region between the reference base station (62) and the slave base station (64). First, the round trip delay between the mobile station (60) and the reference base station (62) is measured by the reference base station (62). Once the mobile station (60) acquires the signal from the slave base station (64), it measures and reports the difference between the amount of time it takes a signal to travel from the reference base station (62) to it and the amount of time it takes a signal to travel from the slave base station (64) to it. The last measurement necessary is a measurement by the slave base station (64) of the time difference between the time it received the reverse link signal from the mobile (60) and station the time it transmitted a signal to the mobile station. A series of computations described in detail herein are performed upon the measured time values to determine the time difference between the slave base station (64) and an adjustment of the slave base station (64) timing is performed in accordance therewith.



A series of computations described in detail herein are performed upon the measured time values to determine the time difference between the slave base station (64) and an adjustment of the slave base station (64) timing is performed in accordance therewith.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/19467

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 H04B1/707 H04B7/26

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 6 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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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| A | EP 0 766 417 A (CIT ALCATEL) 2 April 1997 see column 2, line 57 - column 3, line 56 see column 5, line 58 - column 7, line 36 see claim 5 --- -/-- | 1 |

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Patent family members are listed in annex.

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

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