

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04B 1/707, 7/26	A1	(11) International Publication Number: WO 99/37037 (43) International Publication Date: 22 July 1999 (22.07.99)
(21) International Application Number: PCT/US99/00909 (22) International Filing Date: 15 January 1999 (15.01.99) (30) Priority Data: 09/008,203 16 January 1998 (16.01.98) 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: OGROD, Gregory, D. et al.; Qualcomm Incorporated, 6455 Lusk Boulevard, San Diego, CA 92121 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, 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). Published <i>With international search report.</i>

(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 (504) transmitted from and received by a mobile station (60) either in the soft handoff region between the reference base station (62) and the slave base station (64) or within a range which allows the mobile station (60) to communicate with the slave base station (64). When the mobile station (62) is not in communication with both the reference base station and the slave base station (62), then the round trip delay between the mobile station and the reference base station is measured by the reference base station (62). The reference base station (62) communicates the PN code used by the mobile station over the reverse link to the slave base station. The slave base station (64) acquires the signal (504) from the mobile station (60) and determines when the signal from the mobile station arrives. The slave base station (64) then makes and estimates as to the length of the delay between transmission of a signal from the mobile station (60) to the slave base station (64). Based upon these measurements and estimates, the slave base station (64) determines the error which is present in the slave base station system time.

