US005828662A

United States Patent [19]

Jalali et al.

[11] **Patent Number: 5,828,662**

[45] **Date of Patent: Oct. 27, 1998**

[54] **MEDIUM ACCESS CONTROL SCHEME FOR DATA TRANSMISSION ON CODE DIVISION MULTIPLE ACCESS (CDMA) WIRELESS SYSTEMS**

[75] Inventors: **Ahmad Jalali**, Plano, Tex.; **Witold Krzymien**, Edmonton; **Paul Mermelstein**, Cote St. Luc, both of Canada

[73] Assignee: **Northern Telecom Limited**, Quebec, Canada

[21] Appl. No.: **666,828**

[22] Filed: **Jun. 19, 1996**

[51] **Int. Cl.**[6] **H04B 7/216**

[52] **U.S. Cl.** **370/335**

[58] **Field of Search** 370/320, 321, 370/324, 335, 337, 342, 347, 350, 441; 455/422

[56] **References Cited**

U.S. PATENT DOCUMENTS

5,257,257	10/1993	Chen et al.	370/18
5,260,967	11/1993	Schilling	370/342
5,295,152	3/1994	Gudmundson et al.	375/1
5,309,474	5/1994	Gilhousen et al.	375/206
5,394,391	2/1995	Chen et al.	370/18
5,511,067	4/1996	Miller	370/335
5,586,120	12/1996	Cadd	370/468
5,603,081	2/1997	Raith et al.	455/435
5,604,730	2/1997	Tiedemann, Jr.	370/252
5,640,414	6/1997	Blakeney, II et al.	375/200
5,673,259	9/1997	Quick, Jr.	370/342

FOREIGN PATENT DOCUMENTS

0 564 937 A1	10/1993	European Pat. Off.	H04B 7/26
0 592 209 A1	4/1994	European Pat. Off.	H04B 7/26
0 678 991 A2	10/1995	European Pat. Off.	H04J 13/00
PCT/FI95/00296	12/1995	WIPO .	

OTHER PUBLICATIONS

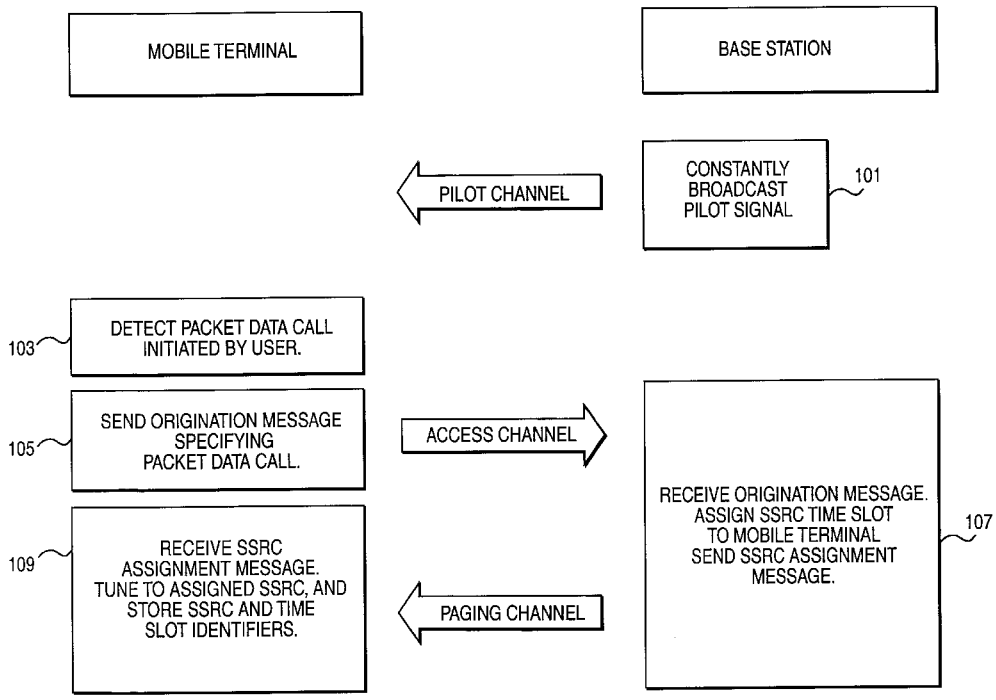
Alfred Baier, Open Multi–Rate Radio Interface Architecture Based on CDMA, Phillips Kommunikations Industrie AG, Nurnberg, Germany, ICUPC '93, IEEE 1993, pp. 985–989.

An Overview of the Application of Code Division Multiple Access (CDMA) to Digital Cellular Systems and Personal Cellular Networks, Qualcomm inc., Jun. 4, 1992, pp. 1–56.

Primary Examiner—Ajit Patel

Attorney, Agent, or Firm—Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.

[57] **ABSTRACT**

A synchronous discontinuous transmission medium access control (SDTX-MAC) method and apparatus for more efficiently using existing uplink channels by sharing these uplink channels between multiple terminals engaged in bursty data transmission. This is accomplished by assigning each mobile terminal an individual time slot and by not requiring each mobile terminal to broadcast its identity. This results in a reduction in the number of receivers on each base station and a reduction in the length of the synchronization message.

16 Claims, 5 Drawing Sheets