US007400640B2

(12) **United States Patent**
Fischer et al.

(10) **Patent No.: US 7,400,640 B2**
(45) **Date of Patent: Jul. 15, 2008**

(54) **PARTITIONED MEDIUM ACCESS CONTROL IMPLEMENTATION**

(75) Inventors: **Michael Andrew Fischer**, San Antonio, TX (US); **Timothy Gordon Godfrey**, Overland Park, KS (US)

(73) Assignee: **Conexant, Inc.**, Red Bank, NJ (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1169 days.

(21) Appl. No.: **10/701,126**

(22) Filed: **Nov. 4, 2003**

(65) **Prior Publication Data**

US 2004/0156385 A1 Aug. 12, 2004

(51) **Int. Cl.**
H04L 12/40 (2006.01)

(52) **U.S. Cl.** **370/438**; 370/463; 370/469

(58) **Field of Classification Search** 370/469, 370/474, 438, 463, 328, 329, 466, 235; 270/394
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,052,580	A	4/2000	Khakoo	
6,765,885	B2 *	7/2004	Jiang et al.	370/328
6,847,654	B2 *	1/2005	Zegelin	370/463
6,904,016	B2 *	6/2005	Kuo et al.	370/235
7,116,667	B2 *	10/2006	Jiang et al.	370/394
7,142,557	B2 *	11/2006	Dhir et al.	370/463
2002/0001296	A1 *	1/2002	Lee et al.	370/338
2002/0001314	A1 *	1/2002	Yi et al.	370/469
2002/0080818	A1 *	6/2002	Zegelin	370/466
2003/0206543	A1 *	11/2003	Fischer et al.	370/338

FOREIGN PATENT DOCUMENTS

WO WO 97/00568 A 1/1997

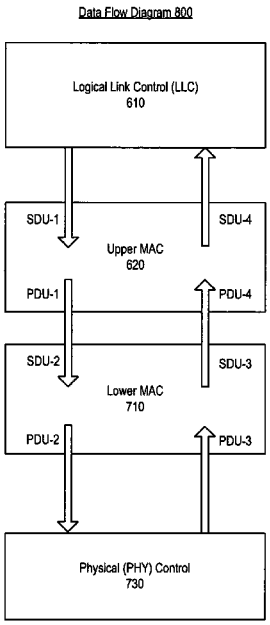
OTHER PUBLICATIONS

Simulation analysis of the air interface protocol for TETRA system (Zhang Jongun, Liuyi, Xhang Naitong, Wang bin) 2001.*
Distributed multichannel manufacturing automation protocol network (Wen-shyang Hwang, Ling-Yang Kung) 1992.*
Bianchi G et al: "A Programmable MAC" Universal Personal Communications, 1998. ICUPC '98. IEEE 1998 International Conf. Florence, Italy Oct. 5, 1998, NY, NY pp. 953-957.

* cited by examiner

Primary Examiner—Edan Orgad
Assistant Examiner—Ho Chuong
(74) *Attorney, Agent, or Firm*—Thomas, Kayden, Horstemeyer & Risley LLP

(57) **ABSTRACT**

A novel implementation of a partitioned medium access control (MAC) is disclosed. The illustrative embodiment employs a shared bus that typically is already present in a wireless terminal for communication between an upper MAC and a lower MAC. The partitioned MAC implementation therefore does not require any additional communication means between the upper MAC and lower MAC, resulting in a lower-cost system. In addition, the upper MAC and lower MAC pass native data structures by reference over the shared bus, thereby eliminating the need for drivers to coordinate communication via interrupts, handshaking, etc. The partitioned MAC implementation results in a cost-effective distributed architecture in which the upper MAC resides in the terminal's host processor, and the lower MAC resides in the terminal's wireless station.

25 Claims, 8 Drawing Sheets