

US007257426B1

# (12) United States Patent

Witkowski et al.

### (54) WIRELESS COMMUNICATIONS SYSTEMS AND METHOD

(75) Inventors: Todd R. Witkowski, Zeeland, MI (US); Kurt A. Dykema, Holland, MI (US); Steven L. Geerlings, Holland, MI (US); Mark L. Zeinstra, Holland, MI

(US)

(73) Assignee: Johnson Controls Technology

Company, Plymouth, MI (US)

(\*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

This patent is subject to a terminal dis-

claimer.

(21) Appl. No.: 09/979,199

(22) PCT Filed: May 26, 2000

(86) PCT No.: PCT/US00/14692

§ 371 (c)(1),

(2), (4) Date: **Apr. 29, 2002** 

(87) PCT Pub. No.: **WO00/72463** 

PCT Pub. Date: Nov. 30, 2000

## Related U.S. Application Data

- (60) Provisional application No. 60/135,979, filed on May 26, 1999.
- (51) **Int. Cl.**

**H04M 1/00** (2006.01)

See application file for complete search history.

(45) **Date of Patent:** \*Aug. 14, 2007

(56) References Cited

(10) Patent No.:

U.S. PATENT DOCUMENTS

US 7,257,426 B1

(Continued)

FOREIGN PATENT DOCUMENTS

DE 3417956 11/1985

(Continued)

OTHER PUBLICATIONS

Briody et al., "Intel to launch wireless initiative", Infoworld, May

18, 1998, 2 pgs.

(Continued)

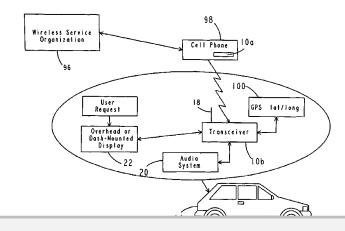
Primary Examiner—Lewis West

(74) Attorney, Agent, or Firm—Foley & Lardner LLP

(57) ABSTRACT

A wireless communications system and method adapted for use in automotive applications for enabling automatic, highspeed, wireless voice and/or data communications link to be established between a wide variety of external devices and various electronic subsystems of a vehicle. The apparatus includes first and second RF transceivers which are operated in accordance with a communications specification to enable a seamless, automatic communications link to be created when the two RF transceivers come within a pre-determined proximity of one another, for example, within up to 100 meters of one another. Information from one device is then automatically transmitted over the wireless communications link to the other device. In various implementations the apparatus is used to obtain information from a home PC, a work PC, a notebook PC and various other electronic devices, as well as information from the Internet, which is displayed and/or played back for the user by various subsystems of the vehicle while traveling in the vehicle. Other applications involving retail and manufacturing applications are disclosed by which the apparatus is used to facilitate and/or expedite manufacturing processes or retail transactions via one or more high-speed, secure, wireless communications links which are created automatically and seamlessly between the RF transceivers of the apparatus of the invention.

## 26 Claims, 13 Drawing Sheets





391/96

#### U.S. PATENT DOCUMENTS

4 975 220 A \* 10/1090 Polett et el

4,875,229 A *	10/1989	Palett et al 381/86
4,905,270 A *	2/1990	Ono 455/569.2
5,584,052 A *	12/1996	Gulau et al 455/79
5,625,673 A	4/1997	Grewe et al.
5,651,056 A *	7/1997	Eting et al 379/88.01
5,661,651 A	8/1997	Geschke et al.
5,732,074 A	3/1998	Spaur et al.
5,758,300 A	5/1998	Abe
5,797,088 A	8/1998	Stamegna 455/345
5,810,420 A *	9/1998	Welling 296/97.5
5,832,390 A *	11/1998	Irvin 455/569.2
5,844,473 A	12/1998	Kaman
5,859,628 A	1/1999	Ross et al.
5,889,472 A	3/1999	Nagel et al.
5,889,474 A *	3/1999	LaDue
5,898,392 A	4/1999	Bambini et al 340/996
5,974,333 A	10/1999	Chen
5,974,334 A	10/1999	Jones, Jr.
5,995,898 A	11/1999	Tuttle
6,023,241 A	2/2000	Clapper
6,038,441 A *	3/2000	Slaven et al 455/413
6,052,603 A	4/2000	Kinzalow et al 455/557
6,055,468 A	4/2000	Kaman et al.
6,058,298 A	5/2000	
6,058,319 A	5/2000	Stamegna
		O'Neill, Jr
6,069,588 A	5/2000 6/2000	
6,081,237 A		Sato et al.
6,085,078 A	7/2000	Stamegna 455/345
6,134,456 A	10/2000	Chen
6,144,114 A 6,154,663 A *	11/2000	Chutorash
0,151,005 11	11/2000	Itamochi 455/569.2
6,173,195 B1	1/2001	Chen
6,198,947 B1 *	3/2001	Barber 455/563
6,215,449 B1	4/2001	O'Neill, Jr 343/713
6,218,958 B1	4/2001	Eichstaedt et al.
6,236,333 B1	5/2001	King
6,285,757 B1*	9/2001	Carroll et al 345/619
6,304,764 B1	10/2001	Pan
6,308,083 B2	10/2001	King
6,340,928 B1	1/2002	McCurdy
6,349,222 B1	2/2002	Hafiz 455/569
6,377,825 B1*	4/2002	Kennedy et al 455/569.2
6,389,337 B1	5/2002	Kolls 701/29
6,397,086 B1	5/2002	Chen 455/569
6,408,232 B1	6/2002	Cannon et al.
6,484,040 B1	11/2002	Wang 455/569
6,532,374 B1	3/2003	Chennakeshu et al.
6,542,758 B1*	4/2003	Chennakeshu et al 455/557
6,549,793 B1*	4/2003	Baratono 455/586.2
2001/0007086 A1	7/2001	Rogers et al.
2001/0045774 A1	11/2001	Rode
2001/0055165 A1	12/2001	McCarthy et al.
2002/0004702 A1	1/2002	Ruhl
2002/0013730 A1	1/2002	Bigus 705/15
2002/0025832 A1	2/2002	Durian et al.
2002/0032510 A1*	3/2002	Turnbull et al 701/49
2002/0049535 A1	4/2002	Rigo et al.
2002/0085043 A1	7/2002	Ribak
2002/0087238 A1	7/2002	Matsui
2002/0138180 A1	9/2002	Hessing et al.
2002/0152027 A1	10/2002	Allen
2002/0152264 4.1	10/2002	Varragalei

10/2002 Yamasaki

2002/0197955 A1 12/2002 Witkowski et al.

## FOREIGN PATENT DOCUMENTS

DE	4323144 A1	1/1995	
DE	196 29 408 A1	1/1998	
DE	19728083	2/1999	
EP	0 821 429 A2	1/1998	
EP	1 024 626 A1	8/2000	
EP	1 043 179 A2	10/2000	
EP	1 216 900 A1	6/2002	
GB	2 296 157 A	6/1996	
WO	WO98/04051 A1	1/1998	
WO	WO98/25248	6/1998	
WO	WO 00/51293 A1	8/2000	
WO	WO 00/72463 A2	11/2000	
WO	WO 01/82532 A1	11/2001	
WO	WO 01/86881 A2	11/2001	

#### OTHER PUBLICATIONS

Haartsen, "Bluetooth-The universal radio interface for ad hoc, wireless connectivity", Ericsson Review No. 3, 1998, pp. 110-117. Bennett F. et al.: "Piconet: Embedded Mobile Networking", IEEE Personal Communications, IEEE Communications Society, US, vol. 4, No. 5, Oct. 1, 1997, pp. 8-15.

Arfwedson et al., "Ericcson's Bluetooth modules", Ericsson Review Nov. 4, 1999, pp. 198-205.

PCT International Search Report PCT/US00/14692 (WO 00/72463).

PCT International Search Report for International Application No. PCT/US2004/000088, mailed Jun. 8, 2004, (4 pages).

Bluetooth—FAQ (Text Only); May 10, 1999; http://www.bluetooth.

com/text/faq/index.asp; printed May 10, 1999; (3 pages). "Bluetooth Comes of Age at CEBIT . . . "; INCISOR; News From The Bluetooth And Short Range RF Environment; Apr. 1999; (7

Hendy, Jeremy; "The Bluetooth Standard"; Ten Points To Ponder; Top Ten; www.csdmag.com; May 1999; (p. 13). Ohr, Stephan; Harris, National, "Philips tip 2.4-GHz devices as

HomeRF spec gains stream; Wireless transceivers roll toward home nets"; NEWS (2 pages).

"Startup pins success on Bluetooth wireless"; (1 page).

Ohr, Stephan; "Pushes wireless standard, aims for \$10 price tag"; "Ericsson's transceiver gives bite to Bluetooth"; Electronic Engineering Times; Apr. 19, 1999 (2 pages).

The Australian, "Viking chips to rule the radio waves", © 1998 Nationwide News Proprietary Ltd., Sep. 15, 1998 (3 pgs.).

Chinnock, Chris, "Car PCs out for a test drive only", Electronic Buyers'News, Copyright © 1998 CMP Media LLC, Nov. 16, 1998 (3 pgs.).

Digital Cellular Report, vol. 4, Issue: 11, "New Standard for Wireless Data", © 1998 Phillips Business Information, Inc., Jun. 4, 1998 (1 pg.).

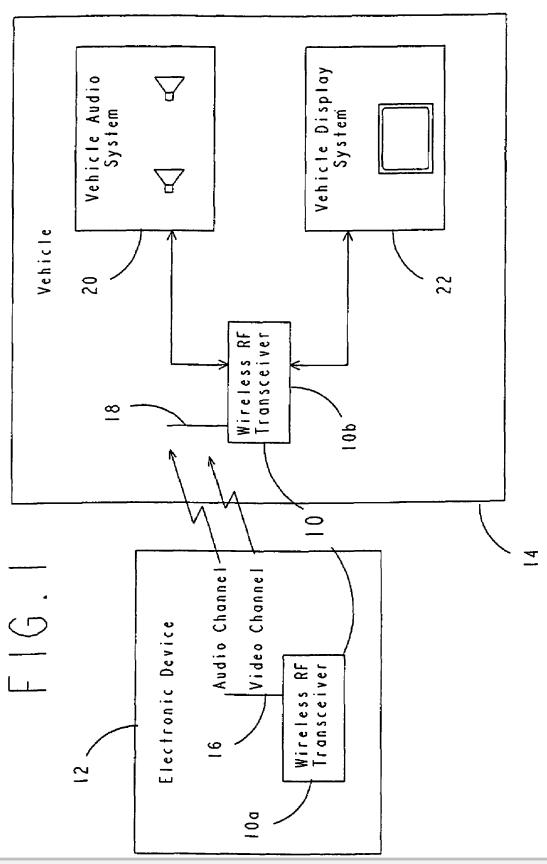
Haartsen, Jaap, "Bluetooth-The universal radio interface for ad hoc, wireless connectivity", Ericsson Review, No. 3, 1998 (pp. 110-117). Lienert, "Phone Users Will Love New DaimlerChrysler feature; UConnect, voice-activiated communication system, gives drivers high-tech convenience," The Detroit News, Aug. 13, 2003, p. 3G. Rothman, "Just Click on 'Decaf'; Get ready for a fresh crop of cool gadgets-from Internet ready coffee machines to protable video players to dolls powered by the latest robotics," Time Magazine, Sep. 8, 2003, p. 70.

\* cited by examiner

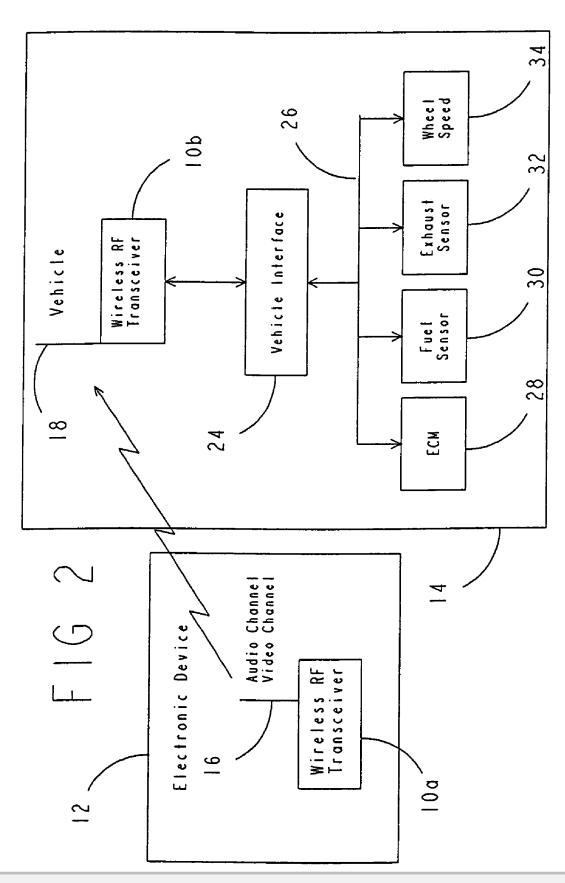


2002/0152264 A1

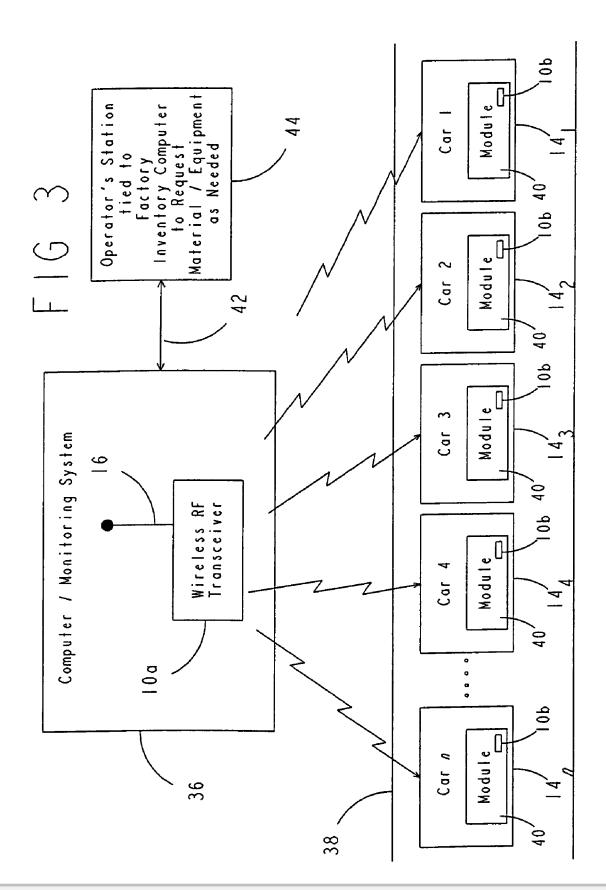
Aug. 14, 2007



Aug. 14, 2007









# DOCKET A L A R M

# Explore Litigation Insights



Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

# **Real-Time Litigation Alerts**



Keep your litigation team up-to-date with **real-time** alerts and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

# **Advanced Docket Research**



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

# **Analytics At Your Fingertips**



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

### **LAW FIRMS**

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

### **FINANCIAL INSTITUTIONS**

Litigation and bankruptcy checks for companies and debtors.

# **E-DISCOVERY AND LEGAL VENDORS**

Sync your system to PACER to automate legal marketing.

