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(54) **SYSTEMS AND METHODS FOR SHORT RANGE WIRELESS COMMUNICATION**

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H04B 7/00 (2006.01)

(52) **U.S. Cl.** ... **455/41.2**; 455/41.1; 455/455; 455/556.1; 455/575.5; 455/100; 360/99.07; 360/99.08; 310/90; 310/268; 310/51; 310/254

(58) **Field of Classification Search** 455/41.2, 455/41.1, 100, 556.1, 575.5; 380/99.08; 310/90, 268, 51; 360/98.07
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,305,244 A * 4/1994 Newman et al. 708/141
5,416,310 A * 5/1995 Little 235/462.44
5,437,057 A 7/1995 Richley
5,759,044 A * 6/1998 Redmond ..... 434/307 R
5,771,438 A * 6/1998 Palermo et al. 455/41.1
5,774,338 A * 6/1998 Wessling, III 361/730
5,798,907 A * 8/1998 Janik 361/683
5,844,824 A * 12/1998 Newman et al. 345/156
5,873,070 A * 2/1999 Bunte et al. 705/28
5,912,925 A * 6/1999 Palermo et al. 375/258
5,982,764 A * 11/1999 Palermo et al. 370/345
6,115,636 A * 9/2000 Ryan 607/60
6,191,517 B1 2/2001 Radovsky
6,208,740 B1 * 3/2001 Grever 381/79
6,208,867 B1 * 3/2001 Kobayashi 455/462
6,233,336 B1 * 5/2001 Croft et al. 379/443
6,331,972 B1 12/2001 Harris et al.
6,349,116 B1 * 2/2002 Hash et al. 375/258
6,424,820 B1 * 7/2002 Burdick et al. 455/41.1
6,459,882 B1 * 10/2002 Palermo et al. 455/41.1

(Continued)

OTHER PUBLICATIONS

Bourzac, Katherine, "Weaable Health Reports", Impact of Emerging Technologies, Technology Review, Feb. 28, 2006, printed Mar. 1, 2006, www.technolgyreview.com/BizTech/wtr_16431.295.p1.html.

(Continued)

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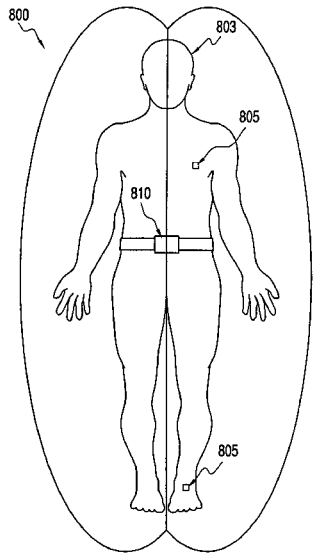
(57) **ABSTRACT**

A magnetic induction data transmission network comprising a master hub, at least one sensor node communicatively coupled to the master hub and a magnetic induction coil preferably adapted to be worn about a bodypart of a subject such as an individual's waist or neck. In at least one embodiment of the invention, the magnetic induction coil preferably includes a connector which serves as an intermediary between the coil and the hub to allow data communication.

18 Claims, 7 Drawing Sheets