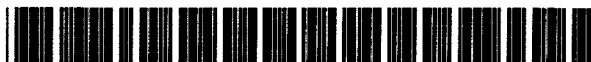


EXHIBIT

*DSS-2001*



US005699357A

# United States Patent [19] Carvey

[11] Patent Number: **5,699,357**  
[45] Date of Patent: **Dec. 16, 1997**

[54] **PERSONAL DATA NETWORK**  
[75] Inventor: **Philip P. Carvey**, Bedford, Mass.  
[73] Assignee: **BBN Corporation**, Cambridge, Mass.

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[21] Appl. No.: **611,695**  
[22] Filed: **Mar. 6, 1996**  
[51] Int. Cl.<sup>6</sup> ..... **H04J 3/06**  
[52] U.S. Cl. .... **370/347; 370/350; 370/442; 370/509; 455/89; 364/708.1**  
[58] **Field of Search** ..... 370/310, 311, 370/312, 313, 365, 367, 348, 349, 350, 431, 433, 442, 443, 445, 449, 458, 462, 465, 468, 503, 509, 510, 512, 511, 514, 522; 455/89, 100, 54.1, 66, 38.3; 375/222; 364/705.01, 705.05, 708.1; 395/200.01, 200.02, 200.17, 200.19, 280, 828, 835, 882, 551; 341/22; 345/156, 157, 169

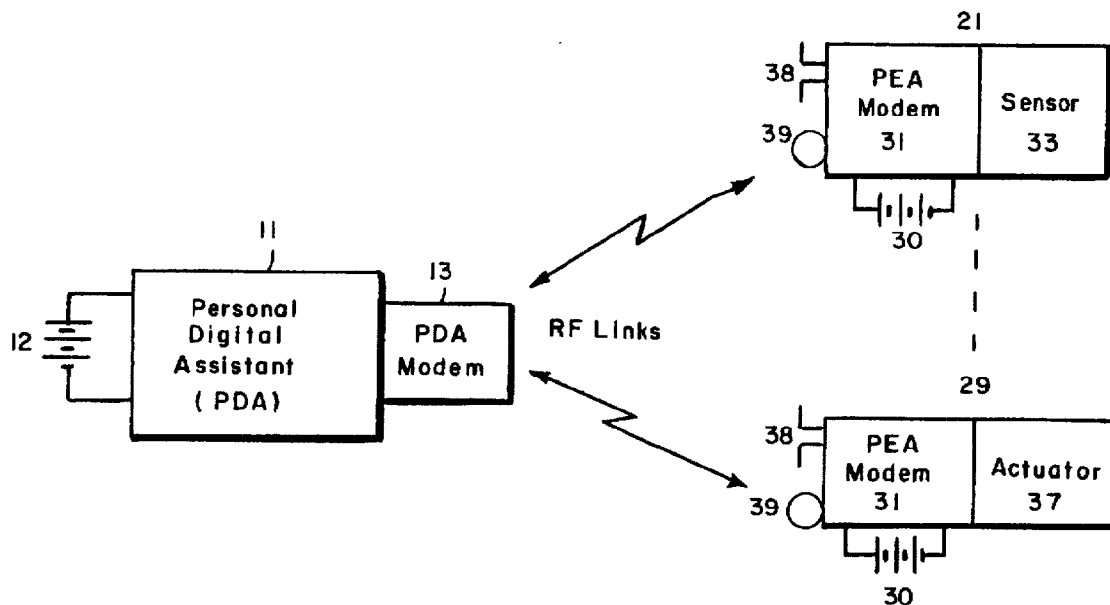
*Primary Examiner*—Wellington Chin  
*Assistant Examiner*—Huy D. Vu  
*Attorney, Agent, or Firm*—Henry D. Pahl, Jr.

### [57] ABSTRACT

The data network disclosed herein utilizes low duty cycle pulsed radio frequency energy to effect bidirectional wireless data communication between a server microcomputer unit and a plurality of peripheral units, each of which is intended to be carried on the person of the microcomputer user. By establishing a tightly synchronized common time base between the units and by the use of sparse codes, timed in relation to the common time base, low power consumption and avoidance of interference between nearby similar systems is obtained.

[56] **References Cited**  
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**18 Claims, 6 Drawing Sheets**



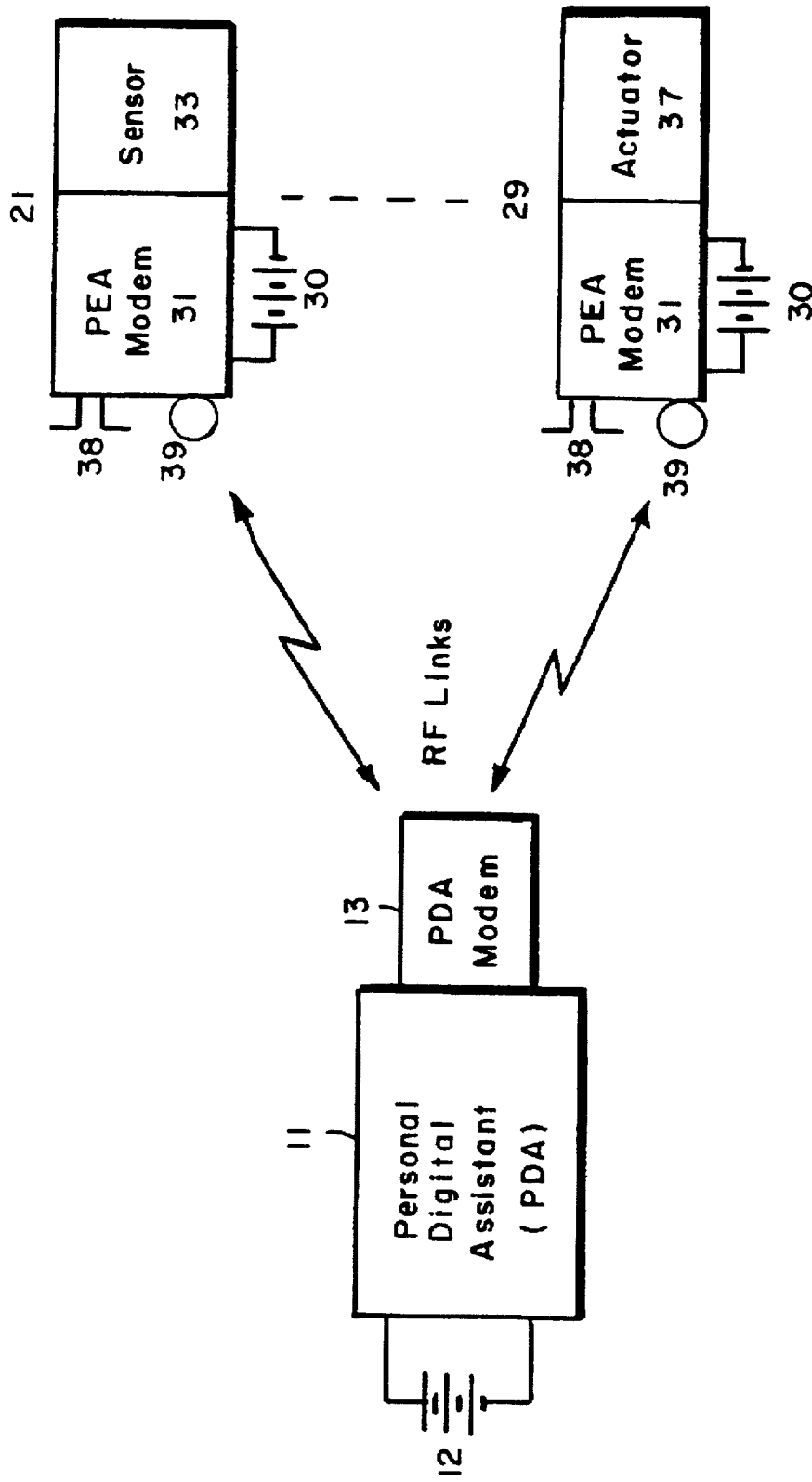


FIG. 1

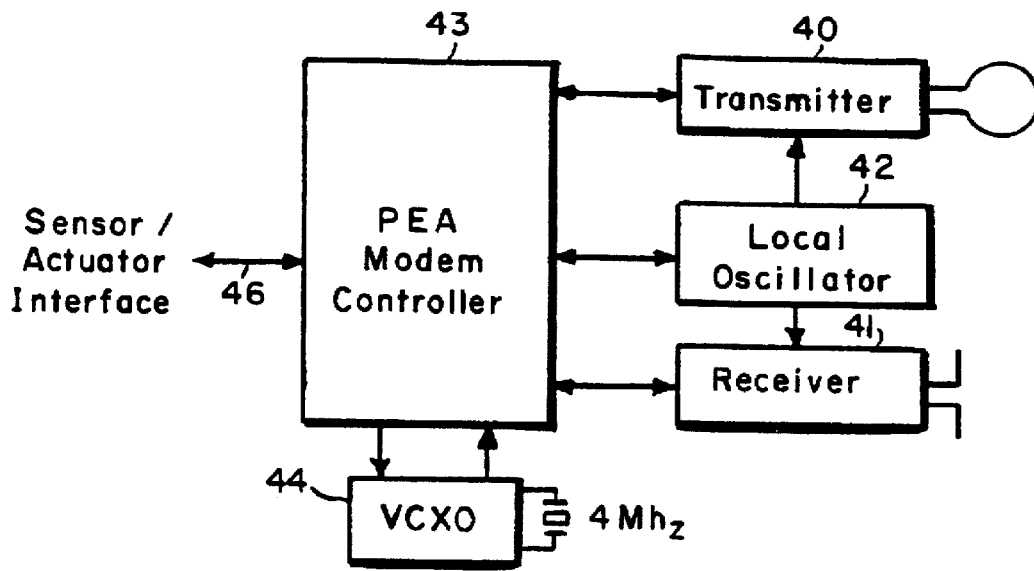


FIG. 2

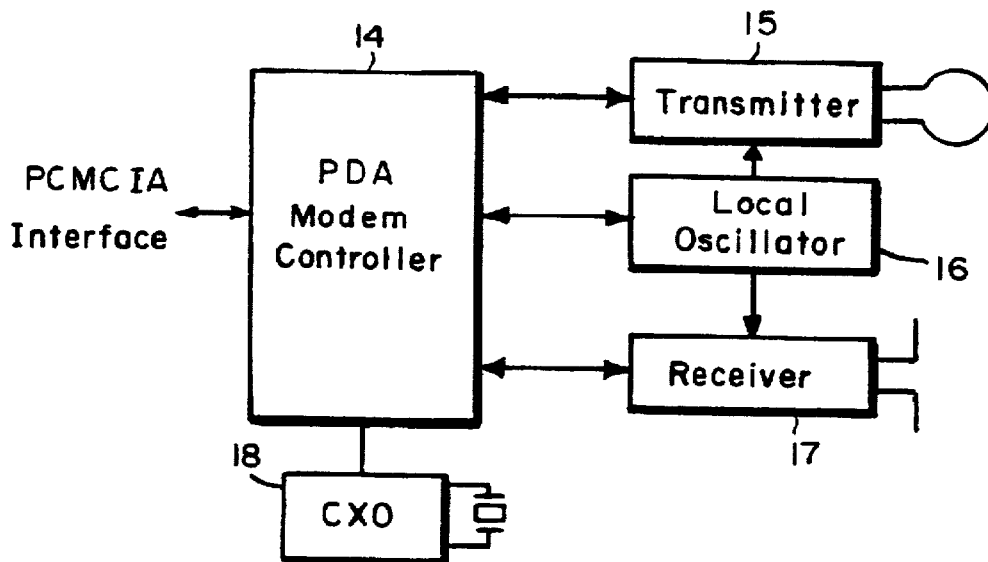


FIG. 3

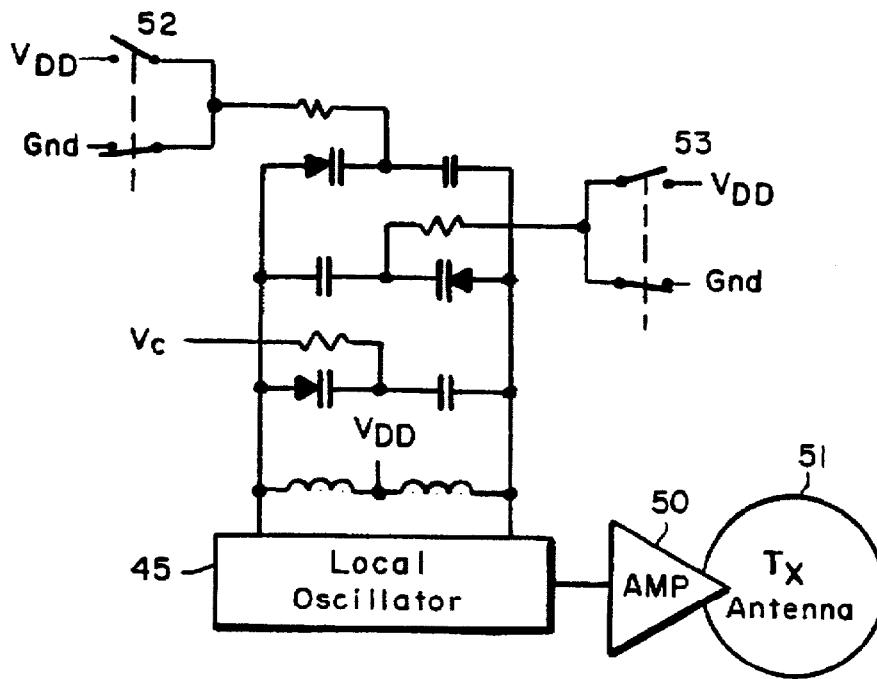


FIG. 4

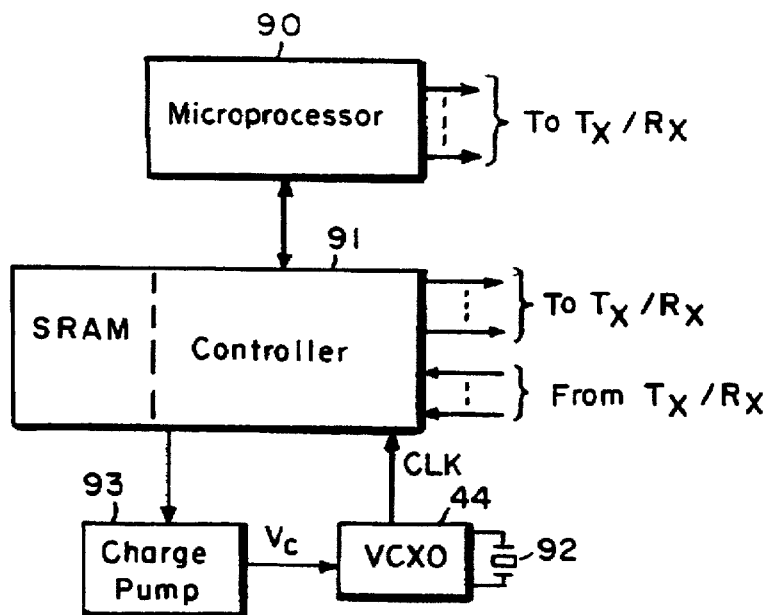


FIG. 7

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