

- [54] **ENSEMBLE MODEM STRUCTURE FOR IMPERFECT TRANSMISSION MEDIA**
- [75] **Inventor:** Dirk Hughes-Hartogs, Morgan Hill, Calif.
- [73] **Assignee:** Telebit Corporation, Cupertino, Calif.
- [21] **Appl. No.:** 736,200
- [22] **Filed:** May 20, 1985
- [51] **Int. Cl.⁴** H04M 11/00; H04B 15/00; H04L 5/00
- [52] **U.S. Cl.** 379/98; 375/39; 375/58; 370/19; 455/63; 455/68
- [58] **Field of Search** 179/2 DP; 375/38, 40, 375/58, 39, 118; 370/16, 19; 455/63, 68; 340/825.15

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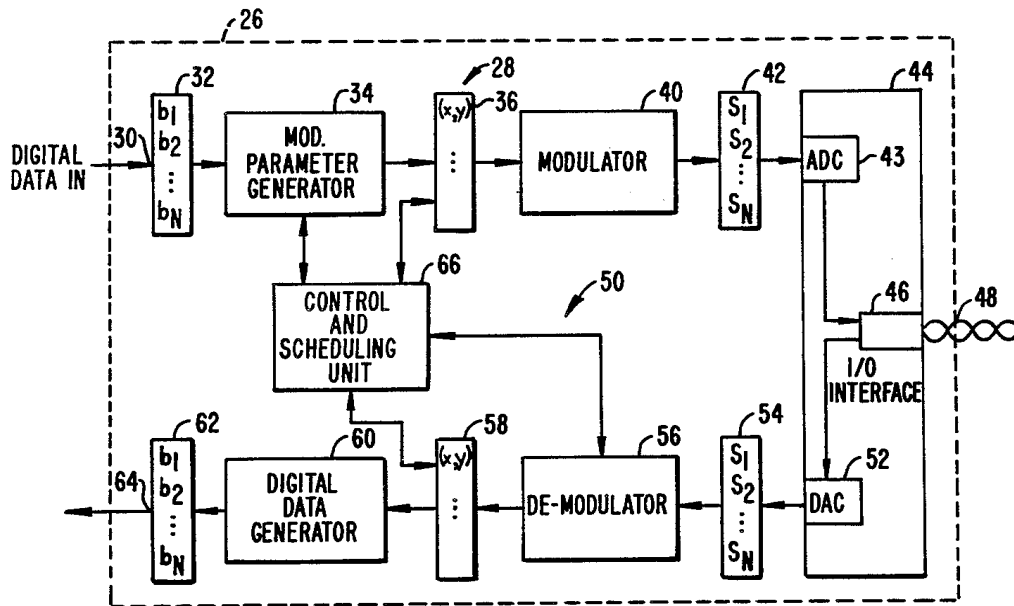
Primary Examiner—Gene Z. Rubinson
Assistant Examiner—M. Connors
Attorney, Agent, or Firm—Townsend and Townsend

[57] **ABSTRACT**

A high-speed modem that transmits and receives digital data on an ensemble of carrier frequencies spanning the usable band of a dial-up telephone line. The modem includes a system for variably allocating data and power among the carriers to compensate for equivalent noise and to maximize the data rate. Additionally, systems for eliminating the need for an equalization network, for adaptively allocating control of a channel, and for tracking variations in line parameters are disclosed.

17 Claims, 13 Drawing Figures

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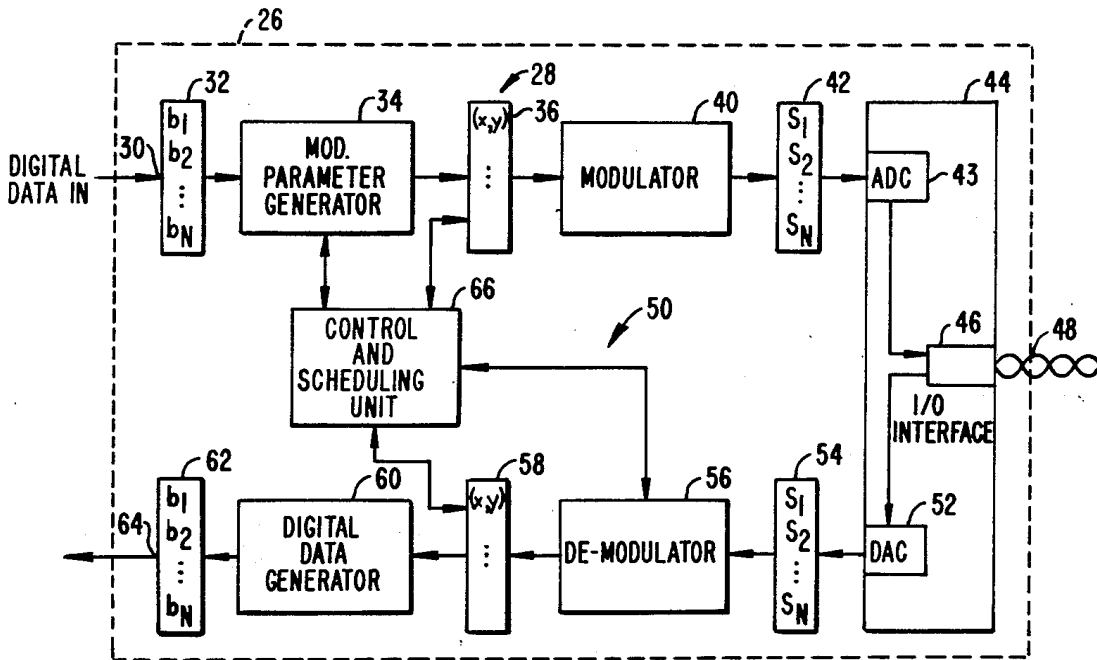
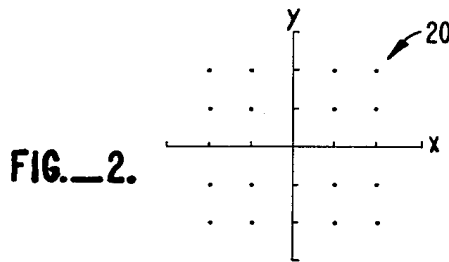
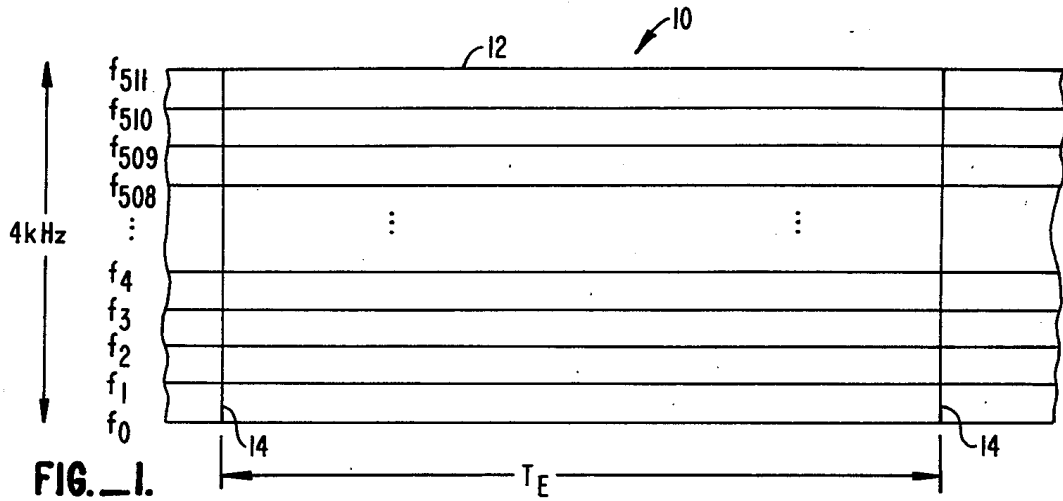


FIG. 3.

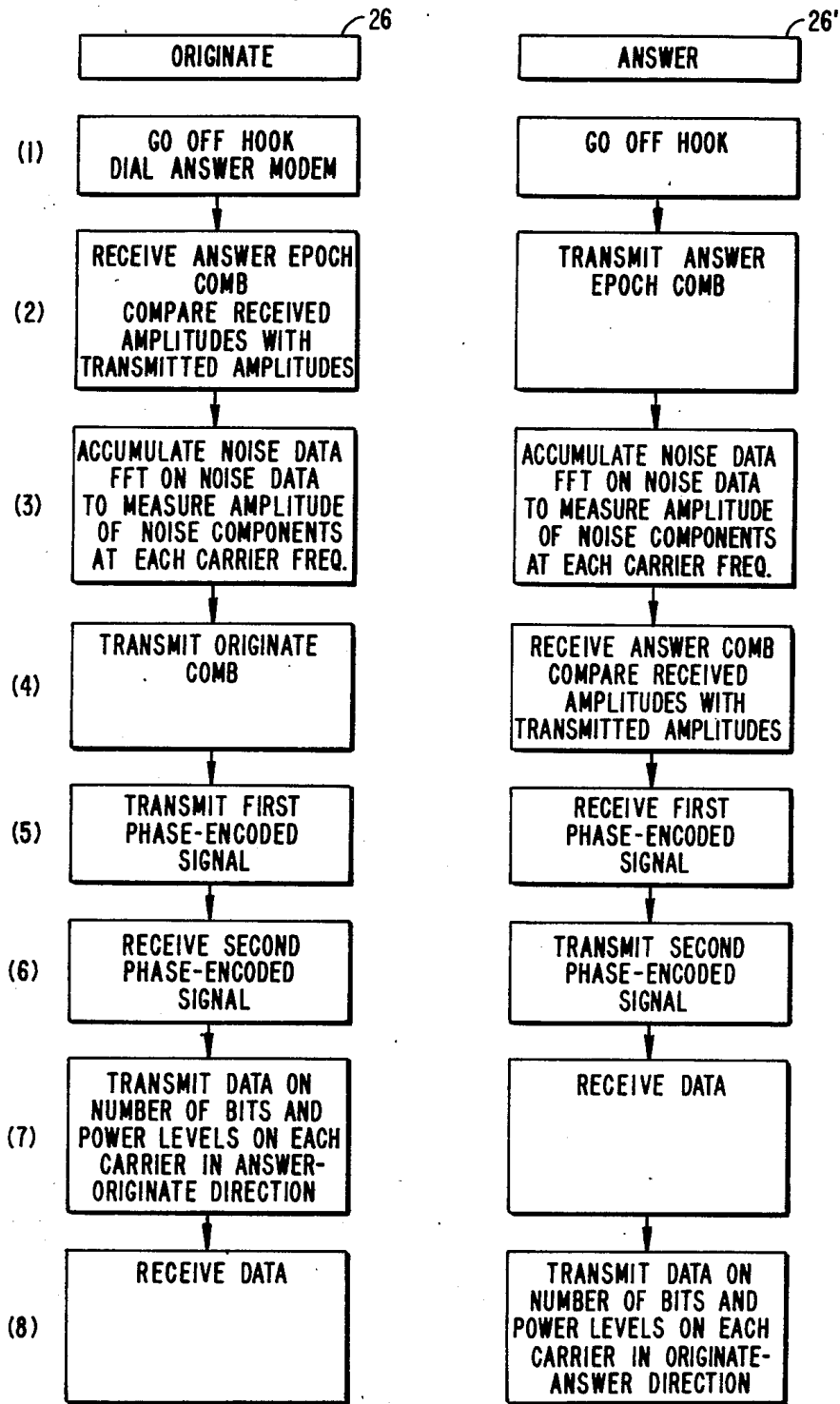


FIG. 4.

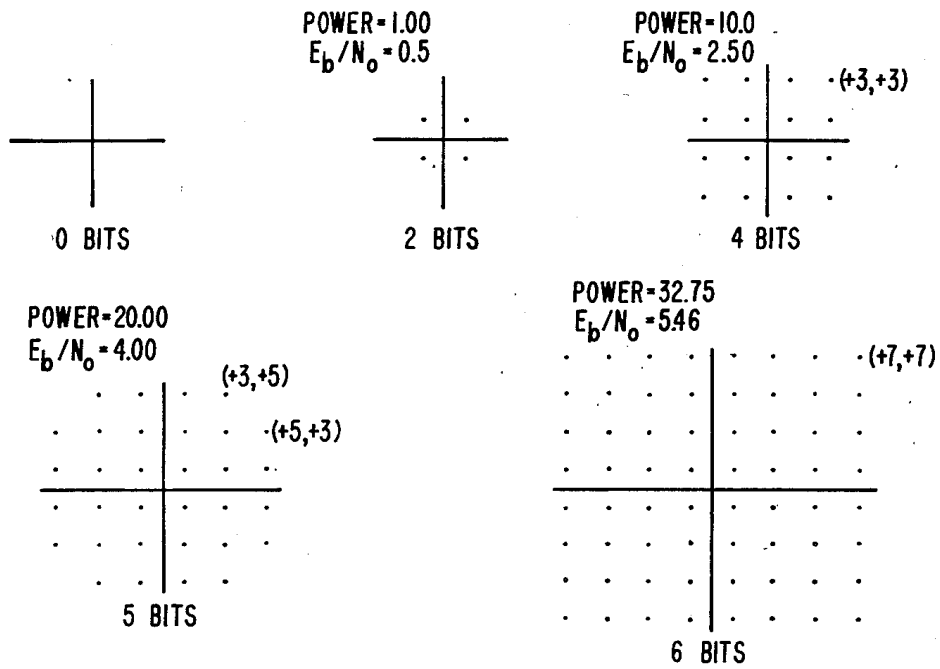


FIG. 5.

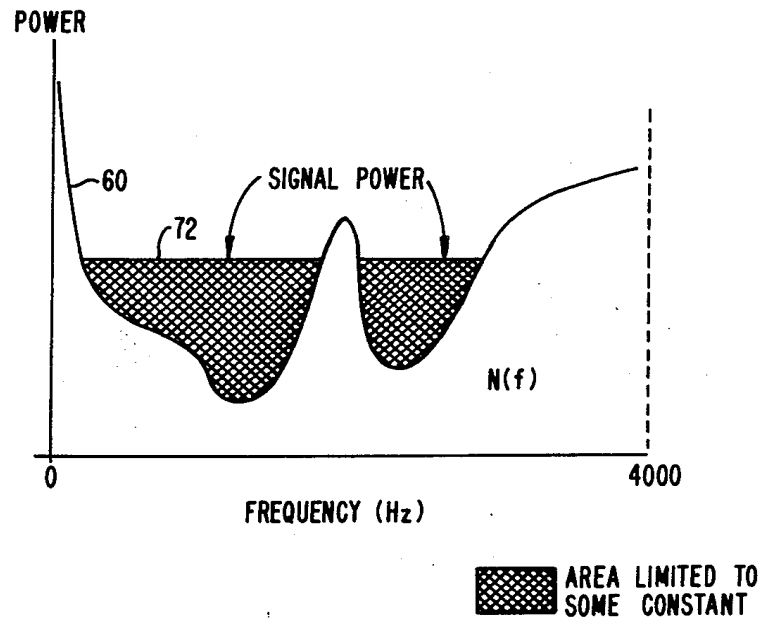


FIG. 6.

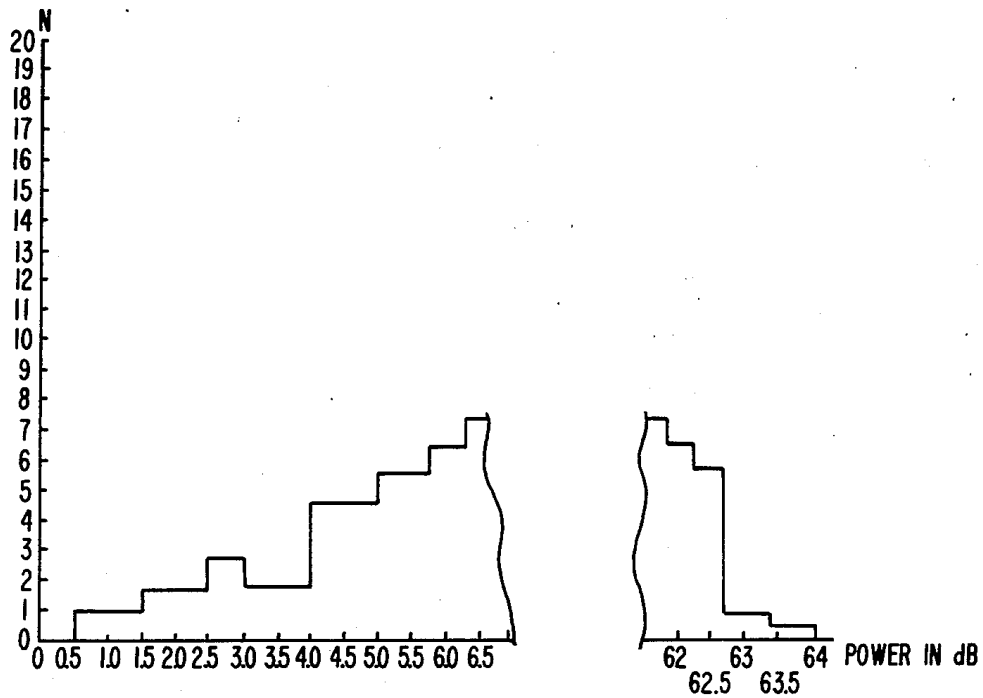


FIG. 7.

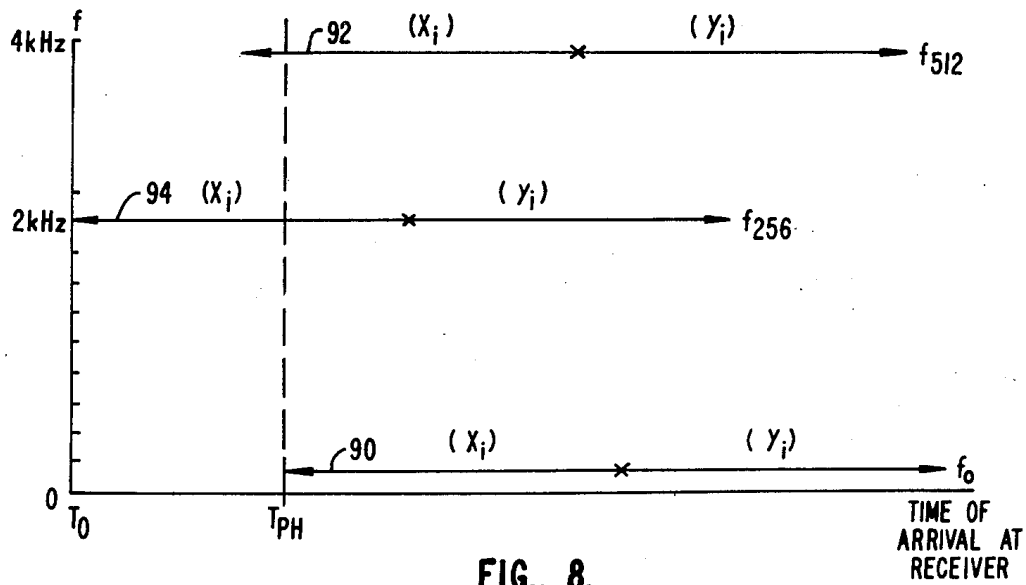


FIG. 8.

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