



US006590893B1

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

(10) **Patent No.:** **US 6,590,893 B1**
(45) **Date of Patent:** **Jul. 8, 2003**

(54) **ADAPTIVE TRANSMISSION SYSTEM IN A NETWORK**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/286,997**

(22) Filed: **Apr. 7, 1999**

(51) Int. Cl.⁷ **H04J 3/06**

(52) U.S. Cl. **370/354; 370/389**

(58) Field of Search **370/354, 403, 370/543, 389, 506; 375/222, 254; 714/749**

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,661,657 A * 4/1987 Grenzebach et al. 375/359

5,426,643 A * 6/1995 Smolinske et al. 375/354
5,477,550 A * 12/1995 Crisler et al. 714/748
5,666,383 A * 9/1997 Huang et al. 375/219
5,910,970 A * 6/1999 Lu 375/222
6,134,274 A * 10/2000 Sankaranarayanan et al. ... 375/254
6,157,612 A * 12/2000 Weerackody et al. 370/215
6,415,410 B1 * 7/2002 Kanerva et al. 714/749

* cited by examiner

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(57) **ABSTRACT**

A network node configured for transmitting and receiving data to and from other network nodes is able to adapt the transmission rate based on the network conditions. The node initially transmits the data to a receiving node at a first rate. If the data is not received error-free, the node is able to reduce the number of data bits of the current packet that are being transmitted and to increase the amount of redundant data. The node repeats the process until error-free transmission is obtained.

17 Claims, 5 Drawing Sheets

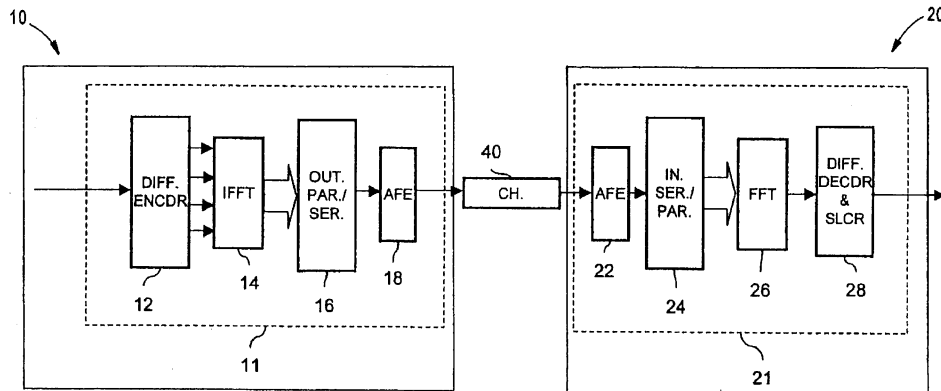


FIG. 1 (PRIOR ART)

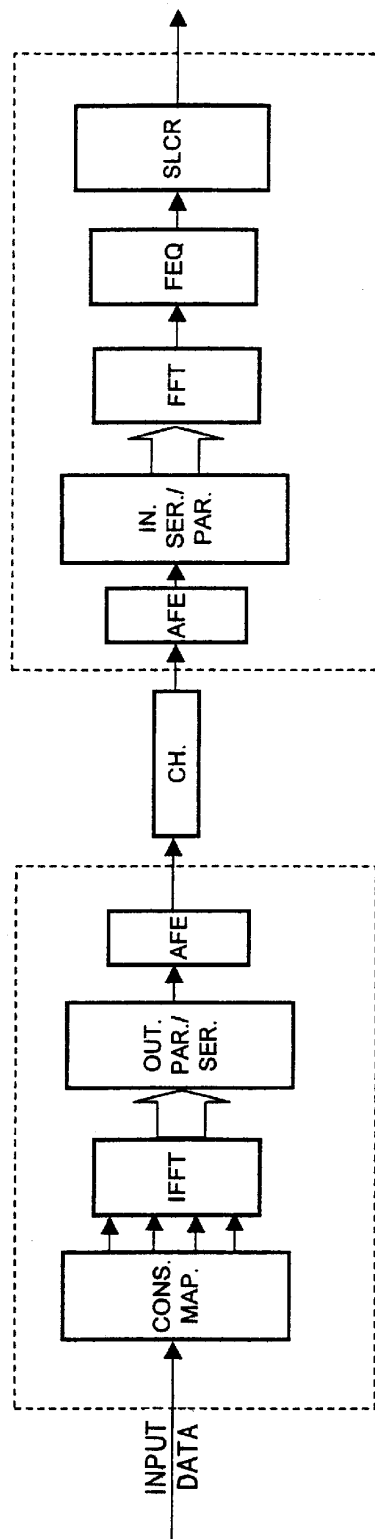
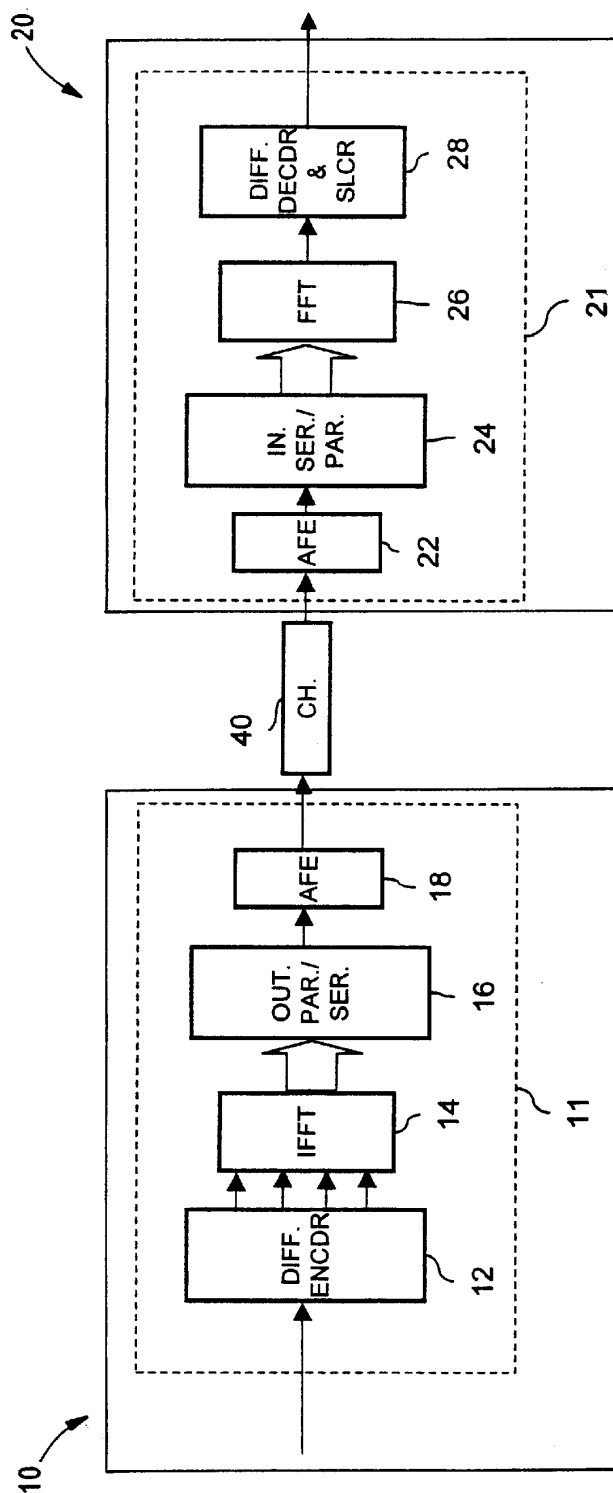
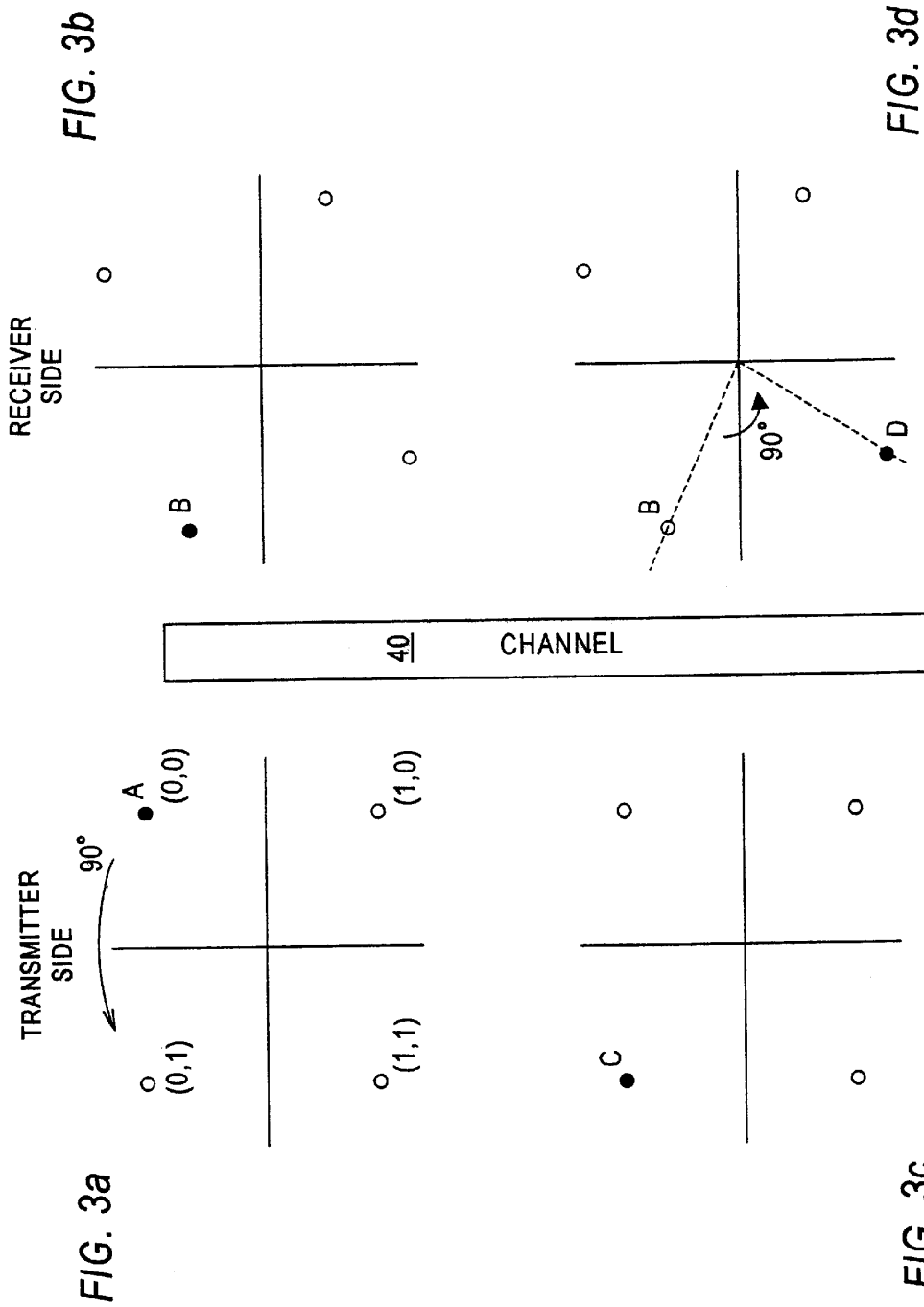


FIG. 2





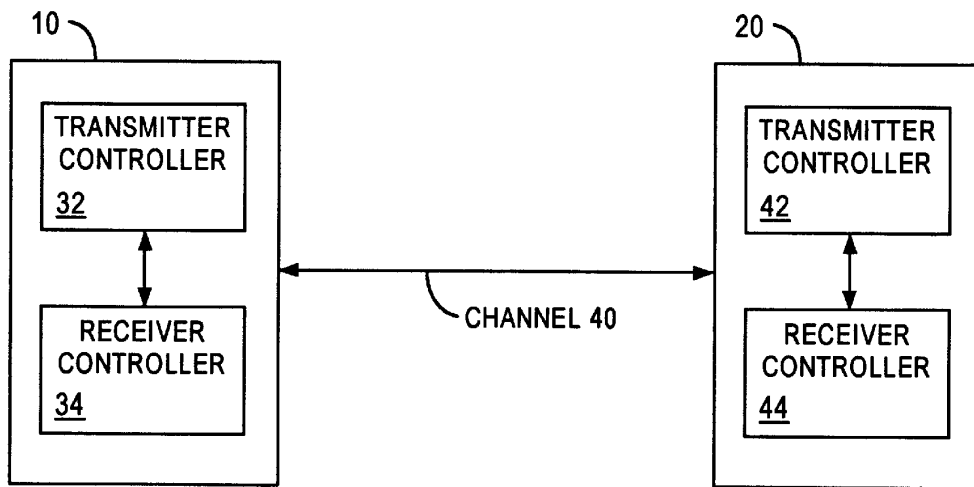


FIG. 4

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