

United States Patent [19]

Kanerva et al.

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[45] Date of Patent: **Aug. 11, 1998**

[54] **MULTICHANNEL HIGH-SPEED DATA TRANSFER**

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5,566,208 10/1996 Balakrishnan 370/468

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[57] **ABSTRACT**

[21] Appl. No.: **690,262**

[22] Filed: **Jul. 24, 1996**

[30] **Foreign Application Priority Data**

Dec. 18, 1995 [FI] Finland 956087

[51] Int. Cl.⁶ **H04J 3/16**; H04J 13/00

[52] U.S. Cl. **370/209**; 370/342; 370/433; 370/468; 371/32

[58] Field of Search 370/345, 347, 370/348, 412, 417, 433, 468, 476, 498, 517, 458, 209, 342, 441; 371/32, 33

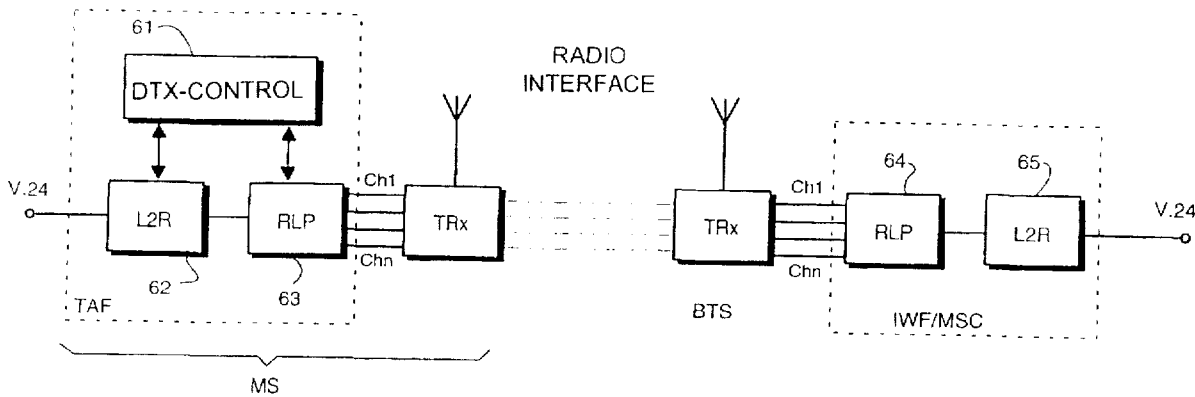
A digital mobile communication system has a high-speed non-transparent data connection between a transmitting and a receiving party. For the data connection, parallel subchannels, corresponding in number to the nominal data transfer rate, have been allocated on the radio interface. A radio link protocol is responsible for transmitting data over the radio interface, and for acknowledging correct data frames and for retransmitting defective data frames. A transmission buffer buffers the data frames to be transmitted and stores the data frames transmitted until it receives an acknowledgement of successful reception. In order to reduce interference and power consumption, user data is transmitted by using as many of the allocated subchannels as required by the actual user data rate at any one time. On the other allocated subchannels, transmission is interrupted or discontinuous transmission is applied.

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,103,336 7/1978 Gindi et al. 395/285

25 Claims, 9 Drawing Sheets



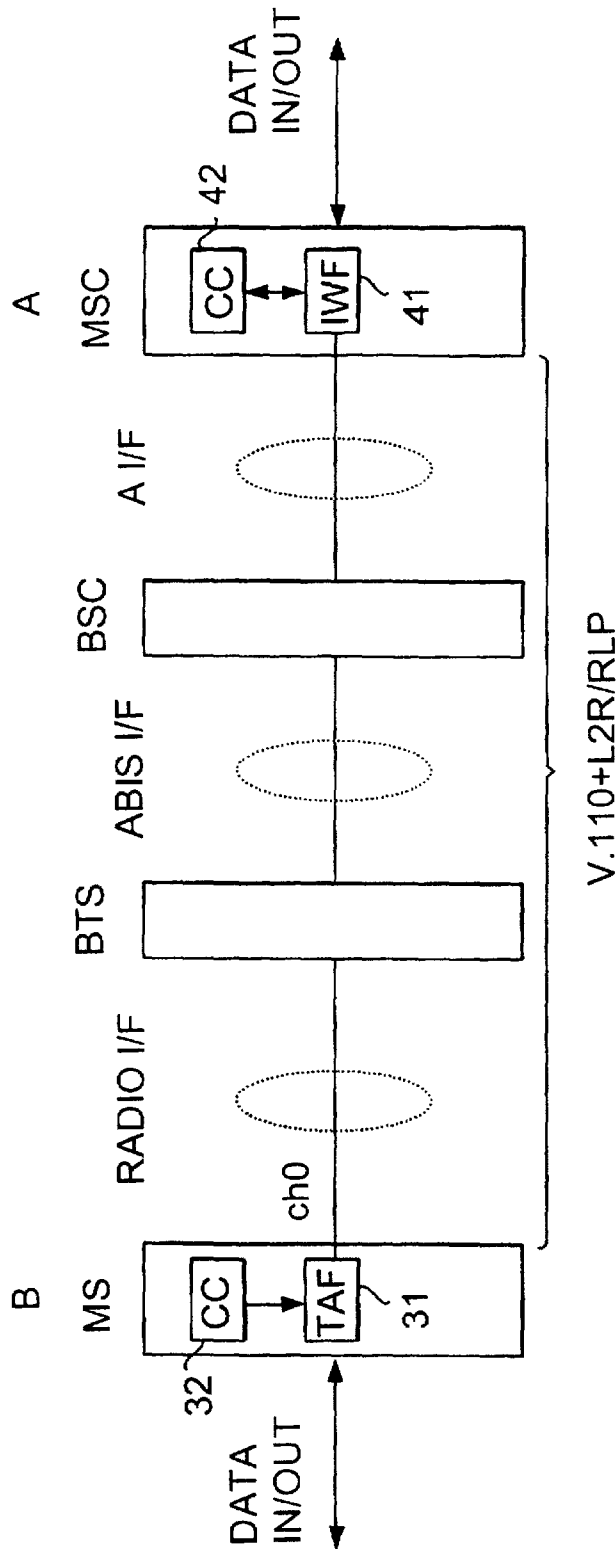


FIG. 1

RADIO
INTERFACE

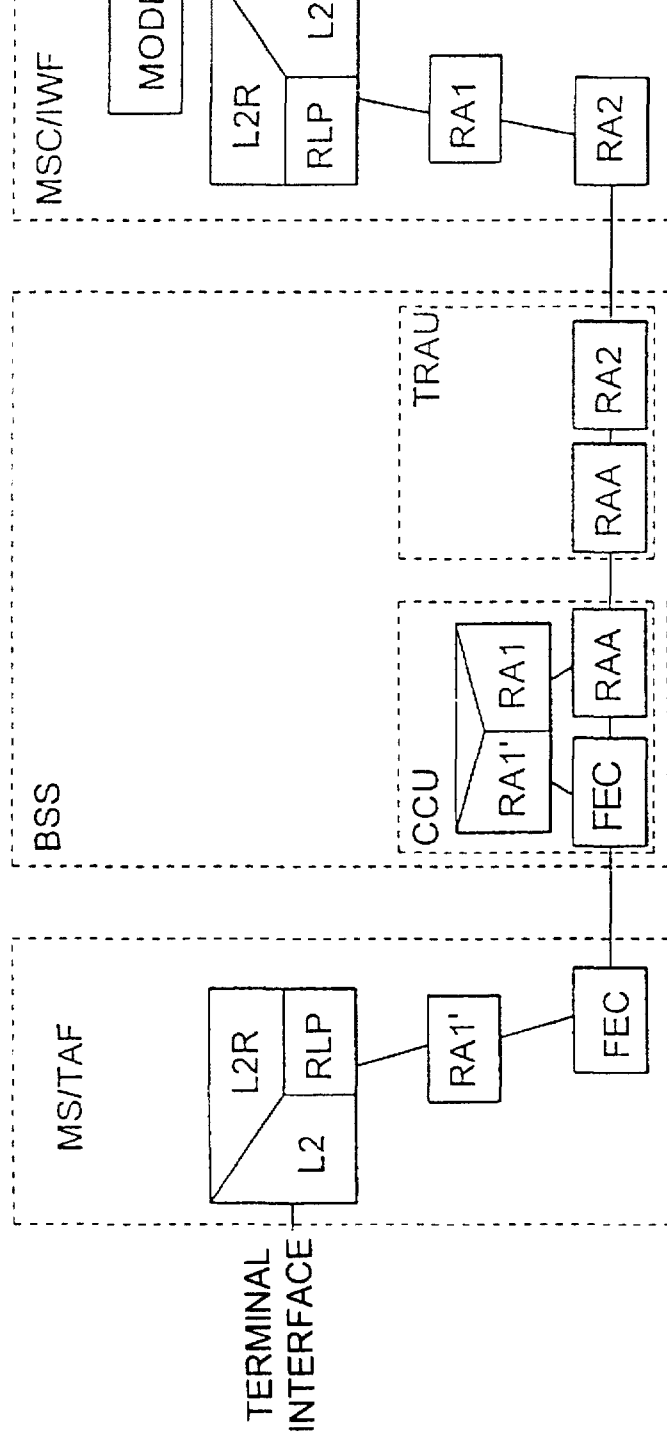


FIG. 2

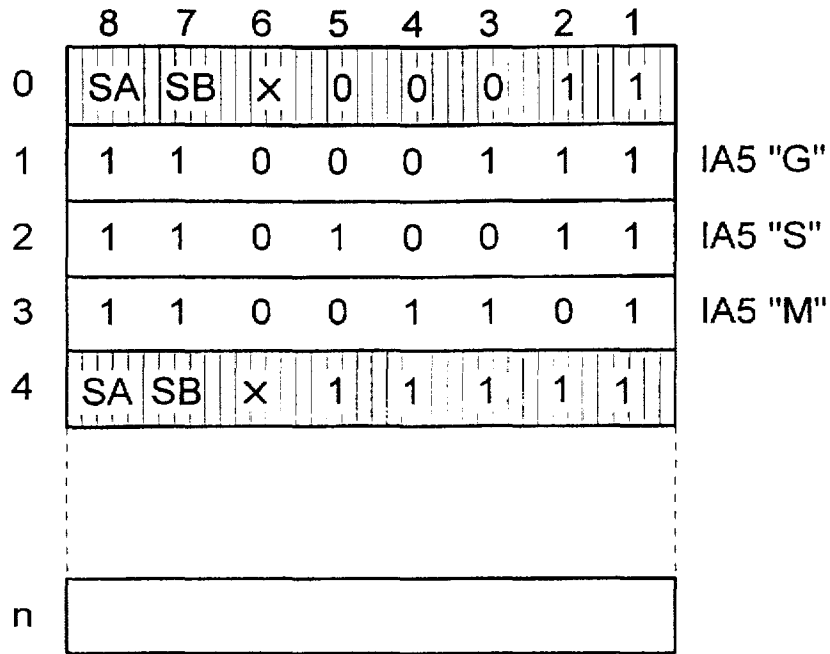


FIG. 3



FIG. 4

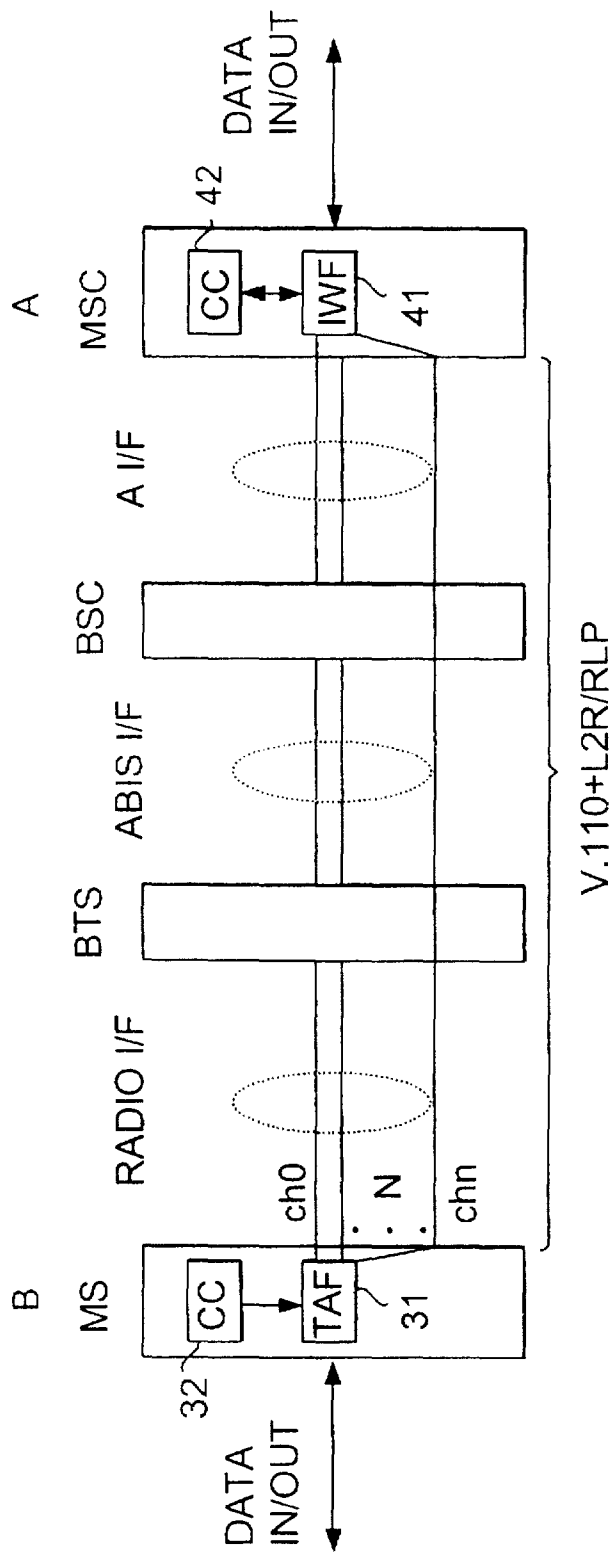


FIG. 5

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