US005822359A

United States Patent [19]

Bruckert et al.

[11] **Patent Number: 5,822,359**

[45] **Date of Patent: Oct. 13, 1998**

[54] **COHERENT RANDOM ACCESS CHANNEL IN A SPREAD-SPECTRUM COMMUNICATION SYSTEM AND METHOD**

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[21] Appl. No.: **323,944**

[22] Filed: **Oct. 17, 1994**

[51] **Int. Cl.**[6] **H04B 1/707**

[52] **U.S. Cl.** **375/200**; 375/206; 375/208; 375/367; 370/209; 370/320; 370/335; 370/342; 370/515

[58] **Field of Search** 375/200, 205, 375/208, 206, 367; 370/18, 22, 95.1, 100.1, 105.1, 105.4, 111, 209, 320, 335, 342, 515, 527; 380/46, 47, 48

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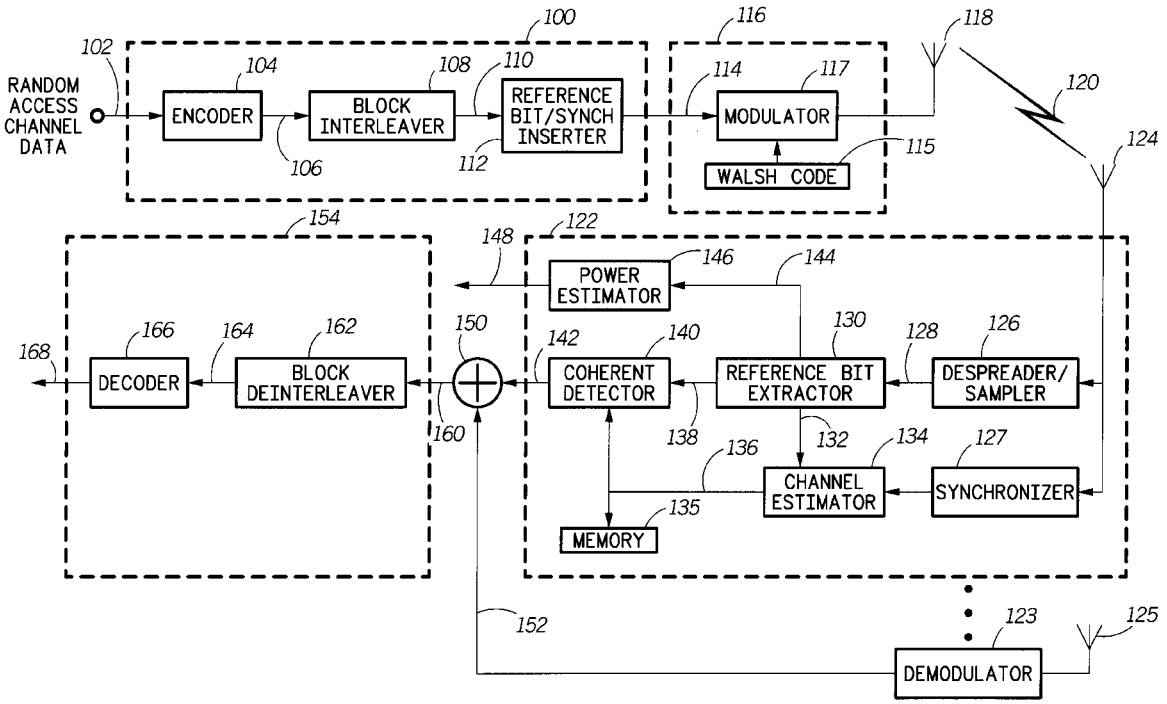
[57] **ABSTRACT**

A method and apparatus is provided to facilitate coherent communication in a random access channel. In encoding, reference symbols are inserted into a stream of access channel message data symbols and appended to a synchronization message to form a reference coded access channel transmission. Subsequently, the access channel transmission is prepared for transmission over a communication channel by being spread with a spreading code. In decoding, a known synchronization sequence is correlated with a received communication signal to generate a correlation peak when a synchronization message is present. The received communication signal is despread with a spreading code to derive a stream of reference samples and data samples. A channel response is determined from the correlation peak and revised based on estimates derived from the stream of reference samples. Finally, an estimated data symbol is detected from the stream of data samples by utilizing the revised channel response.

32 Claims, 3 Drawing Sheets