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(54) **METHOD OF OPERATION OF A MULTI-STATION NETWORK**

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(57) **ABSTRACT**

The invention provides a method of operating a communication network. The network comprises numerous stations, each of which can transmit and receive data in order to transmit messages from originating stations to destination stations opportunistically via intermediate stations. Each station selects one of a number of possible calling channels to transmit probe signals to other stations. The probe signals contain data identifying the station in question and include details of its connectivity to other stations. Other stations receiving the probe signals respond directly or indirectly, thereby indicating both to the probing station and other stations their availability as destination or intermediate stations. The probing station evaluates the direct or indirect responses to identify other stations with which it can communicate optimally. For example, the stations may monitor the cumulative power required to reach another station, thereby defining a power gradient to the other stations, with stations selecting a route through the network which optimizes the power gradient. Thus, data throughput through the network is maximized with minimum interference and contention between stations.

**30 Claims, 7 Drawing Sheets**

