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(54) SELF-CONFIGURING RADIO NETWORK

(75) Inventor: Grant McGibney, Calgary (CA)

(73) Assignee: Telecommunications Research Laboratories, Edmonton (CA)

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Primary Examiner—David Vincent

Assistant Examiner—Phirin Sam

(74) Attorney, Agent, or Firm—Christensen O'Connor Johnson Kindness PLLC

(57) ABSTRACT

The invention is a radio terminal that co-ordinates with similar terminals around it to form a time division multiple access (TDMA) network. No base station or special devices are needed to manage the network. The terminals autonomously establish the critical functions that form the backbone of the network including routing and synchronization. Once established, any terminal can send radio messages through the network using any modulation format, analogue or digital, that meets the network's bandwidth, timing, and power specification. Terminals are able to reach destinations beyond their range by routing signals through neighboring terminals. The routing algorithm is simplified considerably by exploiting the broadcast nature of radio waves and allowing the signal to take more than one path through the network at the same time. For network synchronization, each terminal acts as both a slave, locking its clock frequency to the rest of the network, and a master, pushing the network frequency to match its own reference. In a simplified embodiment of the invention, the terminal accesses the network but does not participate in routing or synchronization. This allows battery-powered devices such as handheld terminals to access the network.

24 Claims, 16 Drawing Sheets

