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(54) Title: APPARATUS AND METHODS FOR PROVIDING HIGH-PENETRATION MESSAGING IN WIRELESS COMMUNICATIONS SYSTEMS

(57) Abstract

A message, e.g., a control message, a short message, a voice message or a data message, is transmitted on at least one of a first communications channel having a first redundancy level or a second communications channel having a second, higher redundancy level. A radio communications signal is received on one of the first communications channel and the second communications channel. The received radio communications signal is demodulated to recover the message using a first demodulation scheme if the radio communications signal is received on the first communications channel and using a second demodulation scheme if the radio communications signal is received on the second communications channel. According to an aspect of the invention, the received radio communications signal is coherently demodulated if the radio communications signal is received over the first communications channel and non-coherently demodulated if the radio communications signal is received over the second communications channel. According to another aspect, the message is transmitted on the first communications channel using a first modulation constellation, and transmitted on the second communications channel using a second modulation constellation representing a subset of the first modulation constellation. In other embodiments of the present invention, a first radio communications signal is transmitted representing the message encoded according to one of a first code or a second code that represents a concatenation of the first code and an additional code, such as an orthogonal code or a quasi orthogonal code. Related systems and apparatus are also described.



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