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(54) Title: RADIO COMMUNICATION APPARATUS (57) Abstract In a radio communication system operating in at least two spaced-apart frequency bands above 200 MHz, a quadrifilar helical antenna (1) having an elongate dielectric core with a relative dielectric constant greater than 5 has a conductive sleeve surrounding a proximal part of the core and a longitudinal feeder structure (1A) extending through the core to a connection with the helical antenna elements at a distal end of the core. The antenna (1) is operated in a first frequency band in which it exhibits a first, balanced mode of resonance characterised by current maxima and voltage minima at the connections of the helical elements to the feeder structure and at their junctions with the rim of the sleeve, and in a lower or higher second frequency band in which the antenna (1) exhibits a second, single-ended mode of resonance characterised by current maxima and voltage minima generally at the ends of the core and current minima and voltage maxima at one or more intermediate locations. To permit dual mode operation, the system includes an impedance-matching coupling stage (2) which may be a diplexer having filters coupled between a common port for the antenna (1) and further ports for connection to radio signal processing equipment such as a GPS receiver (4) and a mobile telephone (5) operating in the two frequency bands. The filters and impedance matching elements may be formed as microstrip elements on a single substrate.		

