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(54) UPLINK MULTIPLE INPUT-MULTIPLE OUTPUT (MIMO) TRANSMITTER APPARATUS

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(57) **ABSTRACT**

An uplink multiple input-multiple output (MIMO) transmitter apparatus includes a transmitter chain that includes a sigma-delta circuit that creates a summed (sigma) signal and a difference (delta) signal from two original signals to be transmitted. These new sigma and delta signals are amplified by power amplifiers to a desired output level before having two signals reconstructed from the amplified sigma and amplified delta signals by a second circuit. These reconstructed signals match the two original signals in content but are at a desired amplified level relative to the two original signals. The reconstructed signals are then transmitted through respective antennas as uplink signals. By employing this uplink MIMO transmitter apparatus, it is possible to use smaller power amplifiers, which may reduce footprint, power consumption, and costs of the uplink MIMO transmitter apparatus.

