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(54) Title: METHOD AND APPARATUS FOR MULTIPLE-INPUT MULTIPLE-OUTPUT OPERATION

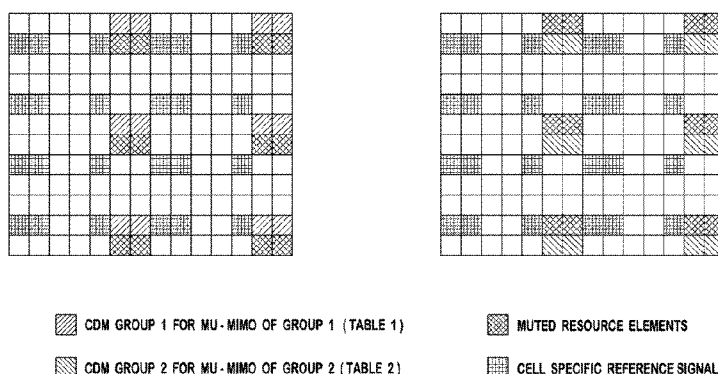


FIG. 3

(57) Abstract: A wireless transmit/receive unit (WTRU) receives a downlink transmission from an eNodeB including a plurality of spatial layers transmitted to a plurality of WTRUs paired for multi-user MIMO. The WTRU decodes the downlink transmission based on a corresponding WTRU-specific reference signal. WTRU-specific reference signals are multiplexed using a frequency and code division multiplexing. WTRU-specific reference signals for different sub-group of antenna ports are multiplexed onto different subcarriers in a frequency domain and the WTRU-specific reference signals of the same sub-group of antennas ports are multiplied by an orthogonal cover code. The resource elements used for the WTRU-specific reference signals on antenna ports in one sub-group may be muted on antenna ports in another sub-group. A WTRU may transmit the uplink demodulation reference signal without precoding. The number of resource blocks allocated for the demodulation reference signal may be greater than the number of resource blocks allocated for the payload.

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