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(54) **METHOD AND DEVICE FOR DESIGNING REFERENCE SIGNAL FOR PHASE NOISE ESTIMATION IN ORTHOGONAL FREQUENCY DIVISION MULTIPLEXING SCHEMES**

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(57) **ABSTRACT**

According to an embodiment of the present disclosure, a method of designing a reference signal for phase noise estimation in an orthogonal frequency division multiplexing (OFDM) communication system, the method comprising: acquiring a magnitude of a frequency bandwidth of phase noise; acquiring a magnitude of a subcarrier; comparing the magnitudes of the subcarrier and the frequency bandwidth; selecting one of a first phase compensation scheme and a second phase compensation scheme based on the comparison result, and inserting the reference signal into an OFDM symbol based on the selected phase compensation scheme; and transmitting the OFDM symbol including the reference signal.

Common phase noise throughout transmission antenna

Common phase noise throughout reception antenna