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(54) **APPARATUS AND METHOD FOR GENERATING PREAMBLE SEQUENCES IN AN OFDM COMMUNICATION SYSTEM**

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See application file for complete search history.

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(57) **ABSTRACT**

An apparatus for generating a preamble sequence in an orthogonal frequency division multiplexing (OFDM) communication system using A subcarriers in a frequency domain. A preamble sequence generator generates a length-M+N+k preamble sequence, where M+N+k is less than A, by combining a length-N Golay complementary sequence with a length-M Golay complementary sequence. An inverse fast Fourier transform (IFFT) processor assigns elements constituting the preamble sequence to the M+N+k subcarriers among the A subcarriers on a one-to-one mapping basis, assigns null data to remaining subcarriers excluding the M+N+k subcarriers from the A subcarriers, and then IFFT-transforms the assigned result into time-domain data.

26 Claims, 15 Drawing Sheets

