**ABSTRACT**

A method for generating a preamble sequence in an orthogonal frequency division multiplexing (OFDM) communication system having A subcarriers in a frequency domain. The method comprises generating a length-2xMxN preamble sequence, where 2xM>N is less than A, by using a length-N Golay complementary sequence and a length-M Golay complementary sequence, and assigning elements constituting the preamble sequence to 2xMxN subcarriers among the A subcarriers on a one-to-one mapping basis, assigning null data to the remaining subcarriers excluding the 2xMxN subcarriers from the A subcarriers, and then IFFT-transforming the assigned result into time-domain data.

26 Claims, 15 Drawing Sheets