

(12) **United States Patent**  
**Cho et al.**

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(54) **APPARATUS AND METHOD FOR TRANSMITTING/RECEIVING A PILOT SIGNAL FOR DISTINGUISHING A BASE STATION IN A COMMUNICATION SYSTEM USING AN OFDM SCHEME**

(58) **Field of Classification Search** ..... 370/343, 370/319, 208  
See application file for complete search history.

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(57) **ABSTRACT**

A method for transmitting reference signals in a radio communication system in which a frequency band is divided into a plurality of sub-frequency bands. The reference signals are transmitted through at least one of the plurality of sub-frequency bands, and data signals are transmitted through the plurality of sub-frequency bands except for the at least one of the plurality of sub-frequency bands. The method includes the steps of: determining a reference signal pattern representing positions of the at least one of the plurality of sub-frequency bands through which the reference signals are transmitted in consideration of a preset time and a preset bandwidth; generating the reference signals using a PN code and a Walsh code; and transmitting the reference signals through the sub-frequency bands corresponding to the reference signal pattern.

**13 Claims, 7 Drawing Sheets**

