A system for performing cell acquisition in a frequency overlay communication system having a first frequency band and a second frequency band including the first frequency band. A base station (BS) generates a reference signal used for identifying a cell using a specific sequence in a predetermined frequency band, and transmits the reference signal. A mobile station (MS) receives the reference signal to determine whether the BS uses the first frequency band or the second frequency band, determines a reference signal having a maximum correlation value through correlation calculation with at least one predefined sequence, and detects a BS identifier (ID) corresponding to the determined reference signal.

28 Claims, 10 Drawing Sheets