WHAT IS CLAIMED IS:

1. A method for transmitting a downlink control channel in a mobile communication system using Orthogonal Frequency Division Multiplexing (OFDM), the method comprising the steps of:

mapping symbols of a control signal to Resource Element (RE) groups for transmission over the downlink control channel, each of the RE groups comprising a plurality of REs having a time domain and a frequency domain, and during mapping, a time index in the time domain is increased from an initial value up to a predetermined value while a frequency index in the frequency domain is maintained at a given value, before increasing the frequency index from the given value to a next value; and

transmitting the mapped symbols over the downlink control channel,

wherein a number of the plurality of REs in each of the RE groups depends on an index of an OFDM symbol, and

wherein each of the RE groups in a first OFDM symbol of a first slot in a subframe comprises two REs for transmission of a cell-specific reference signal and four REs for transmission of the control signal.

2. The method of claim 1, further comprising:

transmitting information associated with available REs.

3. The method of claim 1, wherein the predetermined value is the number of OFDM symbols used for transmission of the downlink control channel.

4. The method of claim 1, wherein the downlink control channel is a Packet Dedicated Control Channel (PDCCH) and the RE groups are not assigned a Physical Channel Format Indication Channel (PCFICH) or a Physical Hybrid Automatic Repeat reQuest (H-ARQ) Indicator Channel (PHICH).

5. The method of claim 1, wherein time indices for a plurality of REs in a same RE group are identical.

6. The method of claim 1, wherein the number of REs in each of the RE groups depends on a number of cell-specific reference signals in each of the OFDM symbols.

7. The method of claim 6, wherein each of the RE groups in a first OFDM symbol of a first slot in a subframe comprises six REs.

8. The method of claim 6, wherein, when one or two cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises four REs.

9. The method of claim 6, wherein, when four cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises six REs.

10. The method of claim 6, wherein each of the RE groups in a third OFDM symbol of a first slot in a subframe comprises four REs.

11. The method of claim 1, wherein, when four cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises two REs for transmission of a cell-specific reference signal and four REs for transmission of the control signal.

12. The method of claim 1, wherein information regarding the predetermined value is transmitted via a PCFICH.

13. An apparatus for transmitting a downlink control channel in a mobile communication system using Orthogonal Frequency Division Multiplexing (OFDM), the apparatus comprising:

a controller configured to control operations of:

mapping symbols of a control signal to Resource Element (RE) groups for transmission over the downlink control channel, wherein, during mapping, a time index

in a time domain is increased from an initial value up to a predetermined value while a frequency index in a frequency domain is maintained at a given value, before increasing the frequency index from the given value to a next value, and

transmitting the mapped symbols over the downlink control channel;

a mapper configured to map the symbols of the control signal to the RE groups; and

a transmitter configured to transmit the mapped symbols over the downlink control channel,

wherein each of the RE groups comprises a plurality of REs, and each of the RE groups has the time domain and the frequency domain,

wherein a number of the plurality of REs in each of the RE groups depends on an index of an OFDM symbol, and

wherein each of the RE groups in a first OFDM symbol of a first slot in a subframe comprises two REs for transmission of a cell-specific reference signal and four REs for transmission of the control signal.

14. The apparatus of claim 13, wherein the transmitter transmits information associated with available REs.

15. The apparatus of claim 13, wherein the predetermined value is the number of OFDM symbols used for transmission of the downlink control channel.

16. The apparatus of claim 13, wherein the downlink control channel is a Packet Dedicated Control Channel (PDCCH) and the RE groups are not assigned a Physical Channel Format Indication Channel (PCFICH) or a Physical Hybrid Automatic Repeat reQuest (H-ARQ) Indicator Channel (PHICH).

17. The apparatus of claim 13, wherein time indices for a plurality of REs in a same RE group are identical.

18. The apparatus of claim 13, wherein the number of REs in each of the RE groups depends on the number of cell-specific reference signals in each of the OFDM symbols.

19. The apparatus of claim 18, wherein each of the RE groups in a first OFDM symbol of a first slot in a subframe comprises six REs.

20. The apparatus of claim 18, wherein, when one or two cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises four REs.

21. The apparatus of claim 18, wherein, when four cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises six REs.

22. The apparatus of claim 18, wherein each of the RE groups in a third OFDM symbol of a first slot in a subframe comprises four REs.

23. The apparatus of claim 13, wherein, when four cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises two REs for transmission of a cell-specific reference signal and four REs for transmission of the control signal.

24. The apparatus of claim 13, wherein information regarding the predetermined value is transmitted via a PCFICH.

25. A method for receiving a downlink control channel in a mobile communication system using Orthogonal Frequency Division Multiplexing (OFDM), the method comprising the steps of:

receiving the downlink control channel; and

obtaining symbols of a control signal which are mapped to Resource Element (RE) groups from the received downlink control channel, each of the RE groups comprising a plurality of REs,

wherein each of the RE groups has a time domain and a frequency domain,

wherein a number of the plurality of REs in each of the RE groups depends on an index of an OFDM symbol,

wherein, during mapping, a time index in the time domain is increased from an initial value up to a predetermined value while a frequency index in the frequency domain is maintained at a given value, before increasing the frequency index from the given value to a next value, and

wherein each of the RE groups in a first OFDM symbol of a first slot in a subframe comprises two REs for transmission of a cell-specific reference signal and four REs for transmission of the control signal.

26. The method of claim 25, further comprising:

receiving information associated with available REs.

27. The method of claim 25, wherein the predetermined value is the number of OFDM symbols used for transmission of the downlink control channel.

28. The method of claim 25, wherein the downlink control channel is a Packet Dedicated Control Channel (PDCCH) and the RE groups are not assigned a Physical Channel Format Indication Channel (PCFICH) or a Physical Hybrid Automatic Repeat reQuest (H-ARQ) Indicator Channel (PHICH).

29. The method of claim 25, wherein time indices for a plurality of REs in a same RE group are identical.

30. The method of claim 25, wherein the number of REs in each of the RE groups depends on a number of cell-specific reference signals in each of the OFDM symbols.

31. The method of claim 30, wherein each of the RE groups in a first OFDM symbol of a first slot in a subframe comprises six REs.

32. The method of claim 30, wherein, when one or two cell-specific reference

signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises four REs.

33. The method of claim 30, wherein, when four cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises six REs.

34. The method of claim 30, wherein each of the RE groups in a third OFDM symbol of a first slot in a subframe comprises four REs.

35. The method of claim 25, wherein, when four cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises two REs for transmission of a cell-specific reference signal and four REs for transmission of the control signal.

36. The method of claim 25, wherein information regarding the predetermined value is transmitted via a PCFICH.

37. An apparatus for receiving a downlink control channel by in a mobile communication system using Orthogonal Frequency Division Multiplexing (OFDM), the apparatus comprising:

a receiver configured to receive the downlink control channel; and

a controller configured to control operations of:

identifying that the received downlink control channel comprises Resource Element (RE) groups, and

obtaining symbols of the control signal which are mapped to RE groups from the received downlink control channel, each of the RE groups comprising a plurality of REs,

wherein each of the RE groups has a time domain and a frequency domain,

wherein a number of the plurality of REs in each of the RE groups depends on an index of an OFDM symbol,

wherein, during mapping, a time index in the time domain is increased from an initial value up to a predetermined value while a frequency index in the frequency domain is maintained at a given value, before increasing the frequency index from the given value to a next value, and

wherein each of the RE groups in a first OFDM symbol of a first slot in a subframe comprises two REs for transmission of a cell-specific reference signal and four REs for transmission of the control signal.

38. The apparatus of claim 37, wherein the receiver receives information associated with available REs.

39. The apparatus of claim 37, wherein the predetermined value is the number of OFDM symbols used for transmission of the downlink control channel.

40. The apparatus of claim 37, wherein the downlink control channel is a Packet Dedicated Control Channel (PDCCH) and the RE groups are not assigned a Physical Channel Format Indication Channel (PCFICH) or a Physical Hybrid Automatic Repeat reQuest (H-ARQ) Indicator Channel (PHICH).

41. The apparatus of claim 37, wherein time indices for a plurality of REs in a same RE group are identical.

42. The apparatus of claim 37, wherein the number of REs in each of the RE groups depends on a number of cell-specific reference signals in each of the OFDM symbols.

43. The apparatus of claim 42, wherein each of the RE groups in a first OFDM symbol of a first slot in a subframe comprises six REs.

44. The apparatus of claim 42, wherein, when one or two cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises four REs.

45. The apparatus of claim 42, wherein, when four cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises six REs.

46. The apparatus of claim 42, wherein each of the RE groups in a third OFDM symbol of a first slot in a subframe comprises four REs.

47. The apparatus of claim 37, wherein, when four cell-specific reference signals are configured, each of the RE groups in a second OFDM symbol of a first slot in a subframe comprises two REs for transmission of a cell-specific reference signal and four REs for transmission of the control signal.

48. The apparatus of claim 37, wherein information regarding the predetermined value is transmitted via a PCFICH.

WHAT IS CLAIMED IS:

1. A method for allocating resources of a control channel in a mobile communication system using Orthogonal Frequency Division Multiplexing (OFDM), the method comprising:

when a time index and a frequency index of available Resource Elements (REs) are defined as l and k, respectively, dividing the available REs in a two-dimensional structure of (k, l); and

time-first-allocating each RE to a plurality of RE groups while increasing the time index l for each frequency index k from an initial value up to a predetermined range.

2. The method of claim 1, wherein allocating each RE comprises:

determining whether an RE being subjected to time-first allocation is a first RE which is allocated to a corresponding RE group; and

when the subjected RE is a first RE, increasing an index of the corresponding RE group.

3. The method of claim 2, wherein allocating each RE comprises:

when the RE is not a first RE, maintaining an index of the corresponding RE group.

4. The method of claim 1, wherein each of the RE groups include a same number of valid REs for transmission of the control channel except a RE for transmission of a reference signal.

5. The method of claim 1, wherein at least one of the RE groups further includes the RE for transmission of the reference signal used for channel estimation.

6. The method of claim 5, wherein an RE group including an RE for transmission of the reference signal has a greater number of allocated REs than a number of allocated REs in an RE group that transmits only the control channel.

7. The method of claim 1, wherein the control channel includes a

Packet Dedicated Control Channel (PDCCH) transmitted on a downlink.

8. The method of claim 1, wherein a resource allocation for the PDCCH is performed after a resource allocation for a Physical Channel Format Indication Channel (PCFICH) and a Physical Hybrid Automatic Repeat request (H-ARQ) Indicator Channel (PHICH).

9. The method of claim 1, wherein the REs are allocated in units of OFDM symbols on a time domain, and are allocated in units of OFDM tones on a frequency domain.

10. An apparatus for allocating resources of a control channel by a Node B in a mobile communication system using Orthogonal Frequency Division Multiplexing (OFDM), the apparatus comprising:

a mapper for mapping Resource Elements (REs) available for transmission of the control channel; and

a controller for, when a time index and a frequency index of the available REs are defined as l and k, respectively, dividing the available REs in a two-dimensional structure of (k, l), and controlling the mapper to time-first-allocate each RE to a plurality of RE groups while increasing the time index l for each frequency index k from an initial value up to a predetermined range.

11. The apparatus of claim 10, wherein the controller determines whether the RE being subjected to time-first allocation is a first RE which is allocated to a corresponding RE group, and when the RE is a first RE, increases an index of the corresponding RE group.

12. The apparatus of claim 11, wherein when the RE is not a first RE, the controller maintains an index of the corresponding RE group.

13. The apparatus of claim 10, wherein each of the RE groups include a same number of valid REs for transmission of the control channel except a RE for transmission of a reference signal.

14. The apparatus of claim 10, wherein at least one of the RE groups

further includes the RE for transmission of the reference signal used for channel estimation.

15. The apparatus of claim 14, wherein an RE group including an RE for transmission of the reference signal has a greater number of allocated REs than a number of allocated REs in an RE group that transmits only the control channel.

16. The apparatus of claim 10, wherein the control channel includes a Packet Dedicated Control Channel (PDCCH) transmitted on a downlink.

17. The apparatus of claim 10, wherein a resource allocation for the PDCCH is performed after a resource allocation for a Physical Channel Format Indication Channel (PCFICH) and a Physical Hybrid Automatic Repeat reQuest (H-ARQ) Indicator Channel (PHICH).

18. The apparatus of claim 10, wherein the REs are allocated in units of OFDM symbols on a time domain, and are allocated in units of OFDM tones on a frequency domain.

19. An apparatus for receiving a control channel by a User Equipment (UE) in a mobile communication system using Orthogonal Frequency Division Multiplexing (OFDM), the apparatus comprising:

a receiver for receiving the control channel from a wireless channel;

a demapper for demapping Resource Elements (REs) from the received control channel; and

a controller for, when a time index and a frequency index of available REs are defined as l and k, respectively, dividing the available REs in a two-dimensional structure of (k, l), and controlling the demapper to demap the control channel, which was transmitted according to a mapping rule for time-first-allocating each RE to a plurality of RE groups while increasing the time index l for each frequency index k from an initial value up to a predetermined range.

20. The apparatus of claim 19, wherein the mapping rule is adapted to determine whether the RE being subjected to time-first allocation is a first RE

which is allocated to a corresponding RE group, and when the RE is a first RE, increase an index of the corresponding RE group.

21. The apparatus of claim 20, wherein the mapping rule is adapted to maintain an index of the corresponding RE group when the RE is not a first RE.