

CLAIMS

1. A method for transmitting control information in a wireless digital broadcasting system, comprising the steps of:
 - 5 determining signaling information (201) for a physical layer to be transmitted in a frame (101);
 - generating at least one coded block from signaling information having a variable number of bits (402) included in the signaling information for a physical layer; and
 - 10 transmitting a frame including the at least one coded block,
 - wherein the frame includes other signaling information having a fixed number of bits (401) required for receiving the signaling information having the variable number of bits (402),
 - wherein the signaling information having the variable number of bits (402)
 - 15 includes frequency information for a Radio Frequency (RF) channel for transmitting at least one Physical Layer Pipe (PLP).
2. The method of claim 1, wherein the frame includes service data and the signaling information having the variable number of bits (402) includes
20 information required for receiving the service data.
3. The method of claim 1, wherein the frame includes at least one Physical Layer Pipe (PLP) as service data, and when the at least one PLP is transmitted on a plurality of Radio Frequency (RF) channels, the signaling
25 information having the variable number of bits includes information about a variable number of frequencies of RF channels.

4. The method of claim 1, wherein the signaling information having the variable number of bits (402) includes information related to a reserved Further Extension Frame (FEF).

5. The method of claim 1, wherein the signaling information having the variable number of bits (402) includes Layer 1 (L1) configurable information (305) having a lower probability for change in an upcoming frame and L1 dynamic information (306) having a high probability for change in every frame among the signaling information for a physical layer.

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6. The method of claim 1, wherein the signaling information having the fixed number of bits (401) includes Layer 1 (L1) pre-signaling information (302) that remains constant in the signaling information for a physical layer.

7. The method of claim 1, wherein the generation comprises generating the at least one coded block by Low Density Parity Check (LDPC)-encoding the signaling information having the variable number of bits.

8. An apparatus (700) for transmitting control information in a wireless digital broadcasting system, comprising:

an encoder (704) for encoding received information in a predetermined coding scheme;

a transmitter (705) for transmitting a frame over a wireless network; and

a controller (706) for controlling the encoder to generate at least one coded block by encoding signaling information having a variable number of bits (402) included in the signaling information for a physical layer and controlling the transmitter to transmit a frame including the at least one coded block,

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wherein the frame includes other signaling information having a fixed number of bits (401) required for receiving the signaling information having the variable number of bits (402),

wherein the signaling information having the variable number of bits (402) includes frequency information for a Radio Frequency (RF) channel for transmitting at least one Physical Layer Pipe (PLP).

9. The apparatus of claim 8, further comprising a control information generator (703) for generating the signaling information for a physical layer to be transmitted in the frame according to predetermined scheduling.

10. The apparatus of claim 8, wherein the frame includes service data and the signaling information having the variable number of bits (402) includes information required for receiving the service data.

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11. The apparatus of claim 8, wherein the frame includes at least one Physical Layer Pipe (PLP) as service data, and when the at least one PLP is transmitted on a plurality of Radio Frequency (RF) channels, the signaling information having the variable number of bits includes information about a variable number of frequencies of RF channels.

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12. The apparatus of claim 8, wherein the signaling information having the variable number of bits (402) includes information related to a reserved Further Extension Frame (FEF).

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13. The apparatus of claim 8, wherein the signaling information having the variable number of bits (402) includes Layer 1 (L1) configurable information

(305) having a high probability for change in an upcoming frame and L1 dynamic information (306) having a high probability for changed in every frame among the signaling information for a physical layer.

5 14. The apparatus of claim 8, wherein the signaling information having the fixed number of bits (401) includes Layer 1 (L1) pre-signaling information (302) that remains constant in the signaling information for a physical layer.

15 15. The apparatus of claim 8, wherein the encoder Low Density Parity Check (LDPC)-encodes the signaling information having the variable number of bits.

16. A method for receiving control information in a wireless digital broadcasting system, comprising the steps of:

15 receiving signaling information having a fixed number of bits (401) and signaling information having a variable number of bits (402) in coded blocks of a received frame (101); and

decoding said signaling information having the variable number of bits (402) using the signaling information having the fixed number of bits (401),

20 wherein the signaling information having the fixed number of bits (401) includes information about the number of Radio Frequency (RF) channels for receiving at least one Physical Layer Pipe (PLP).

25 17. The method of claim 16, wherein the signaling information having the fixed number of bits (401) includes Layer 1 (L1) pre-signaling information (302) that remains constant in the physical layer signaling information.

18. The method of claim 17, wherein the L1 pre-signaling information

(302) includes information indicating at least one of subcarriers, a modulation scheme, and a code rate used for transmission of the other signaling information.

19. The method of claim 16, wherein the frame (101) includes service data and the signaling information (401, 402) includes information required for receiving the service data.

20. The method of claim 16, wherein the signaling information having the fixed number of bits (401) includes information indicating whether a Further Extension Frame (FEF) is used.

21. The method of claim 16, wherein the signaling information having the fixed number of bits (401) includes information about a cell Identifier (ID), a network ID, a system ID, and an RF index.

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22. The method of claim 16, wherein the frame includes at least one Physical Layer Pipe (PLP) as service data, and when the at least one PLP is transmitted on a plurality of Radio Frequency (RF) channels, the signaling information (401, 402) includes information about frequencies of the plurality of RF channels.

23. The method of claim 16, wherein the signaling information (401, 402) includes information related to a reserved Further Extension Frame (FEF).

24. The method of claim 16, wherein the decoder (802) Low Density Parity Check (LDPC)-decodes the signaling information having the fixed number of bits.

25. An apparatus for receiving control information in a wireless digital broadcasting system, comprising:

5 a receiver for receiving a frame including physical layer signaling information over a wireless network;

a decoder for decoding received information in a predetermined coding scheme; and

10 a controller arranged to control the decoder to decode signaling information having a fixed number of bits included in the physical layer signaling information and to decode signaling information having a variable number of bits included in the physical layer signaling information using the decoded signaling information having the fixed number of bits,

15 and wherein the controller is arranged to decode from the signaling information having the fixed number of bits (401) information about the number of Radio Frequency (RF) channels for receiving at least one Physical Layer Pipe (PLP).

26. The apparatus of claim 25, wherein the signaling information having the fixed number of bits (401) includes Layer 1 (L1) pre-signaling information (302) that remains constant in the physical layer signaling information.

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27. The apparatus of claim 26, wherein the L1 pre-signaling information (302) includes information indicating at least one of subcarriers, a modulation scheme, and a code rate used for transmission of the other signaling information.

25 28. The apparatus of claim 25, wherein the frame (101) includes service data and the signaling information (401, 402) includes information required for receiving the service data.

29. The apparatus of claim 25, wherein the signaling information having the fixed number of bits (401) includes information indicating whether a Further Extension Frame (FEF) is used.

30. The apparatus of claim 25, wherein the signaling information having the fixed number of bits includes information about a cell Identifier (ID), a network ID, a system ID, and an RF index.

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31. The apparatus of claim 25, wherein the frame includes at least one Physical Layer Pipe (PLP) as service data, and when the at least one PLP is transmitted on a plurality of Radio Frequency (RF) channels, the signaling information (401, 402) includes information about frequencies of the plurality of RF channels.

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32. The apparatus of claim 25, wherein the signaling information (401, 402) includes information related to a reserved Further Extension Frame (FEF).

20 33. The apparatus of claim 25, wherein the decoder (802) Low Density Parity Check (LDPC)-decodes the signaling information having the fixed number of bits.

CLAIMS

1. A method for transmitting control information in a wireless digital broadcasting system, comprising the steps of:

determining signaling information (201) for a physical layer to be transmitted in a frame (101);

generating at least one coded block from signaling information having a variable number of bits (402) included in the signaling information for a physical layer; and

transmitting a frame including the at least one coded block,

wherein the frame includes another coded block including other signaling information having a fixed number of bits (401) required for receiving the signaling information having the variable number of bits (402),

wherein the signaling information having the variable number of bits (402) includes frequency information for a Radio Frequency, RF, channel for transmitting at least one Physical Layer Pipe, PLP.

2. The method of claim 1, wherein the frame includes service data and the signaling information having the variable number of bits (402) includes information required for receiving the service data.

3. The method of claim 1, wherein the frame includes at least one Physical Layer Pipe, PLP, as service data, and when the at least one PLP is transmitted on a plurality of Radio Frequency, RF, channels, the signaling information having the variable number of bits includes information about a variable number of frequencies of RF channels.

4. The method of claim 1, wherein the signaling information having the variable number of bits (402) includes information related to a reserved Further Extension Frame, FEF.

5. The method of claim 1, wherein the signaling information having the variable number of bits (402) includes Layer 1, L1, configurable information (305) having a lower probability for change in an upcoming frame and L1 dynamic information (306) having a high probability for change in every frame among the signaling information for a physical layer.

6. The method of claim 1, wherein the signaling information having the fixed number of bits (401) includes Layer 1, L1, pre-signaling information (302) that remains constant in the signaling information for a physical layer.

7. The method of claim 1, wherein the generation comprises generating the at least one coded block by Low Density Parity Check, LDPC,-encoding the signaling information having the variable number of bits.

8. An apparatus (700) for transmitting control information for a wireless digital broadcasting system, comprising:

an encoder (704) for encoding received information in a predetermined coding scheme;

a transmitter (705) for transmitting a frame over a wireless network; and

a controller (706) for controlling the encoder to generate at least one coded block by encoding signaling information having a variable number of bits (402) included in the signaling information for a physical layer and controlling the transmitter to transmit a frame including the at least one coded block,

wherein the frame includes another coded block including other signaling information having a fixed number of bits (401) required for receiving the signaling information having the variable number of bits (402),

wherein the signaling information having the variable number of bits (402) includes frequency information for a Radio Frequency, RF, channel for transmitting at least one Physical Layer Pipe, PLP.

9. The apparatus of claim 8, further comprising a control information generator (703) for generating the signaling information for a physical layer to be transmitted in the frame according to predetermined scheduling.

10. The apparatus of claim 8, wherein the frame includes service data and the signaling information having the variable number of bits (402) includes information required for receiving the service data.

11. The apparatus of claim 8, wherein the frame includes at least one Physical Layer Pipe, PLP1, as service data, and when the at least one PLP is transmitted on a plurality of Radio Frequency, RF, channels, the signaling information having the variable number of bits includes information about a variable number of frequencies of RF channels.

12. The apparatus of claim 8, wherein the signaling information having the variable number of bits (402) includes information related to a reserved Further Extension Frame, FEF.

13. The apparatus of claim 8, wherein the signaling information having the variable number of bits (402) includes Layer 1, L1, configurable information (305) having a high probability for change in an upcoming frame and L1 dynamic information (306) having a high probability for changed in every frame among the signaling information for a physical layer.

14. The apparatus of claim 8, wherein the signaling information having the fixed number of bits (401) includes Layer 1, L1, pre-signaling information (302) that remains constant in the signaling information for a physical layer.

15. The apparatus of claim 8, wherein the encoder Low Density Parity Check, LDPC, -encodes the signaling information having the variable number of bits.