

WHAT IS CLAIMED IS:

1. A method for wireless communications, comprising:
estimating channel quality information for a plurality of downlink carriers, and
configuring an uplink control channel based at least in part on a number of
activated carriers in the plurality.
2. The method of claim 1, wherein the configuring the uplink control
channel comprises:
repeating a codeword within a portion of a transmit timing interval when there
is a first number of activated carriers in the plurality.
3. The method of claim 2, wherein the configuring the uplink control
channel further comprises:
reducing power in a mobile device transmitting the uplink control channel
responsive to the repeating.
4. The method of claim 1, wherein the uplink control channel is
configured to maintain a constant feedback cycle for different numbers of activated carriers.
5. The method of claim 1, wherein the configuring the uplink control
channel comprises:
encoding, when there is a first number of activated carriers in the plurality,
channel quality information for a first carrier in a first codeword and channel quality
information for a second carrier in a second codeword; and
grouping the first codeword and the second codeword for transmission within
a transmit timing interval.
6. The method of claim 5, wherein the configuring the uplink control
channel further comprises:
grouping, when a second number of the plurality of downlink carriers are
activated, channel quality information for a first carrier in a third codeword; and
repeating the codeword in the transmit timing interval.
7. The method of claim 1, wherein the configuring the uplink control
channel comprises:
encoding, when there is a first number of activated carriers in the plurality,
acknowledgement information for a first carrier and a second carrier using a first codeword

and acknowledgement information for a third carrier and a fourth carrier using a second codeword; and

grouping the first codeword and the second codeword for transmission within a slot of a transmit timing interval.

8. The method of claim 7, wherein the configuring the uplink control channel further comprises:

encoding, when there is a second number of activated carriers in the plurality, acknowledgement information for one or more carriers using a third codeword; and repeating the third codeword within the slot of the transmit timing interval.

9. The method of claim 1, wherein the configuring the uplink control channel comprises:

encoding, when there are three activated carriers in the plurality, acknowledgement information for a first carrier and a second carrier using a first codeword and acknowledgement information for a third carrier using a second codeword; and grouping the first codeword and the second codeword for transmission within a slot of a transmit timing interval.

10. The method of claim 1, wherein the configuring the uplink control channel comprises:

encoding acknowledgement information for one or more carriers using a first codeword for transmission within a half-slot of a transmit timing interval.

11. The method of claim 1, wherein the configuring the uplink control channel further comprises:

configuring an uplink control channel based at least in part on whether one or more of the plurality of downlink carriers are configured with MIMO.

12. The method of claim 1, wherein the configuring the uplink control channel further comprises:

using a first spreading factor for a portion of transmit timing interval when there is a first number of activated carriers in the plurality; and using a second spreading factor for the portion of transmit timing interval when there is a second number of activated carriers in the plurality, the second number different from the first number.

13. The method of claim 1, wherein the configuring the uplink control channel further comprises:

encoding, when there is a discontinuous transmission for one or more activated carriers in the plurality, acknowledgement information for the one or more carriers using a codeword signifying a discontinuous transmission.

14. The method of claim 1, wherein the configuring the uplink control channel further comprises:

mapping a first carrier to a first portion of a transmit timing interval when there is a first number of activated carriers in the plurality; and

mapping the first carrier to a second portion of a transmit timing interval when there is a second number of activated carriers in the plurality, the second number different from the first number.

15. The method of claim 1, wherein the configuring the uplink control channel further comprises:

identifying at least four carriers, the four carriers associated with a logical sequential order;

identifying deactivation of one of the at least four carriers; and

preserving a logical sequential order of remaining active carriers on the uplink control channel.

16. The method of claim 1, wherein the configuring the uplink control channel further comprises:

identifying activation of a first number of carriers;

identifying activation of an additional carrier; and

changing configuration of the uplink control channel responsive to the activation of the additional carrier.

17. A mobile terminal for wireless communications, comprising:

a channel quality information measurement module configured to estimate channel quality information for a plurality of downlink carriers; and

a feedback encoder module, communicatively coupled with the channel quality information measurement module, and configured to modify an uplink control channel based at least in part on a number of activated carriers in the plurality.

18. The mobile terminal of claim 17, wherein to modify the uplink control channel, the feedback encoder module is configured to:

repeat a codeword for a portion of a transmit timing interval when there is a first number of activated carriers in the plurality; and
use varied codewords for the portion of the transmit timing interval when there is a second number of activated carriers in the plurality, the second number different from the first number.

19. The mobile terminal of claim 17, wherein to modify the uplink control channel, the feedback encoder module is configured to:

repeat a codeword in a transmit timing interval; and
reduce transmission power in the mobile terminal responsive to the repetition.

20. The mobile terminal of claim 17, wherein the feedback encoder module is configured to:

maintain a constant feedback cycle for different numbers of activated carriers.

21. The mobile terminal of claim 17, wherein to modify the uplink control channel, the feedback encoder module is configured to:

group, when a first number of the plurality of downlink carriers are activated, channel quality information for a first carrier in a first codeword; and
repeat the codeword in a portion of a transmit timing interval.

22. The mobile terminal of claim 21, wherein to modify the uplink control channel, the feedback encoder module is configured to:

encode, when there is a second number of activated carriers in the plurality, channel quality information for a first carrier in a second codeword and channel quality information for a second carrier in a third codeword; and
group the second codeword and the third codeword for transmission within the portion of the transmit timing interval.

23. The mobile terminal of claim 17, wherein to modify the uplink control channel, the feedback encoder module is configured to:

encode, when there is a first number of activated carriers in the plurality, acknowledgement information for a first carrier and a second carrier using a first codeword

and acknowledgement information for a third carrier and a fourth carrier using a second codeword; and

group the first codeword and the second codeword for transmission within a slot of a transmit timing interval.

24. The mobile terminal of claim 23, wherein to modify the uplink control channel, the feedback encoder module is configured to:

encode, when there is a second number of activated carriers in the plurality, acknowledgement information for two carriers using a third codeword; and

repeat the third codeword within the slot of the transmit timing interval.

25. The mobile terminal of claim 17, wherein to modify the uplink control channel, the feedback encoder module is configured to:

encode, when there are three activated carriers in the plurality, acknowledgement information for a first carrier and a second carrier using a first codeword and acknowledgement information for a third carrier using a second codeword; and

group the first codeword and the second codeword for transmission within a slot of a transmit timing interval.

26. The mobile terminal of claim 17, wherein to modify the uplink control channel, the feedback encoder module is configured to:

encode acknowledgement information for one or more carriers using a first codeword for transmission within a half-slot of a transmit timing interval.

27. The mobile terminal of claim 17, wherein to modify the uplink control channel, the feedback encoder module is configured to:

encode, when there is a first number of activated carriers in the plurality, acknowledgement information for the one or more of the activated carriers using a codeword signifying a discontinuous transmission.

28. The mobile terminal of claim 17, wherein to modify the uplink control channel, the feedback encoder module is configured to:

modify an uplink control channel based at least in part on whether one or more of the plurality of downlink carriers are configured with MIMO.

29. The mobile terminal of claim 17, wherein to modify the uplink control channel, the feedback encoder module is configured to:

use a first spreading factor for a portion of a transmit timing interval when there is a first number of activated carriers in the plurality; and

use a second spreading factor for the portion of the transmit timing interval when there is a second number of activated carriers in the plurality, the second number different from the first number.

30. The mobile terminal of claim 17, wherein to modify the uplink control channel, the feedback encoder module is configured to:

map a first carrier to a first portion of a transmit timing interval when there is a first number of activated carriers in the plurality; and

map the first carrier to a second portion of a transmit timing interval when there is a second number of activated carriers in the plurality, the second portion different from the first portion.

31. The mobile terminal of claim 17, wherein,
at least four carriers are activated, the four carriers associated with a logical sequential order; and

when one of the at least four carriers are de-activated, the logical sequential order of the remaining active carriers is preserved in the uplink control channel.

32. The mobile terminal of claim 17, wherein,
the channel quality information measurement module is further configured to:
identify a first number of carriers; and
identify activation of an additional carrier; and
the feedback encoder module is further configured to modify configuration of the uplink control channel responsive to the activation of the additional carrier.

33. A device for wireless communications, comprising:
means for estimating channel quality information for a plurality of downlink carriers; and

means for configuring an uplink control channel based at least in part on a number of activated carriers in the plurality.

34. The device of claim 33, wherein the means for configuring the uplink control channel comprises:

means for repeating a codeword within a portion of a transmit timing interval when there is a first number of activated carriers in the plurality.

35. The device of claim 34, wherein the means for configuring the uplink control channel comprises:

means for reducing power in a mobile device transmitting the uplink control channel responsive to the repeating.

36. The device of claim 33, wherein the means for configuring the uplink control channel maintains a constant feedback cycle for different numbers of activated carriers.

37. The device of claim 33, wherein the means for configuring the uplink control channel comprises:

means to configure an uplink control channel based at least in part on whether one or more of the plurality of downlink carriers are configured with MIMO.

38. A computer program product, comprising:

computer-readable medium comprising:

code for causing a computer to estimate channel quality information for a plurality of downlink carriers; and
code for causing a computer to configure an uplink control channel based at least in part on a number of activated carriers in the plurality.

39. The computer program product of claim 38, wherein the code for causing a computer to configure the uplink control channel comprises:

code for causing a computer to repeat a codeword within a portion of a transmit timing interval when there is a first number of activated carriers in the plurality.

40. The computer program product of claim 39, wherein the code for causing a computer to configure the uplink control channel comprises:

code for causing a computer to reduce power in a mobile device transmitting the uplink control channel responsive to the repeating.

41. The computer program product of claim 38, wherein the code for causing a computer to configure the uplink control channel comprises:

code for causing a computer to configure an uplink control channel based at least in part on whether one or more of the plurality of downlink carriers are configured with MIMO.

CLAIMS

1. An invention not claimed in any divisional application.