CLAIMS

1. A method for wireless communication, comprising:

sending a message on a control channel for random access by a user equipment (UE);

sending a reserved channel identifier to indicate the message being sent on the control channel; and

sending the message and the reserved channel identifier on an uplink shared channel carrying the control channel.

2. The method of claim 1, wherein the sending a message on a control channel comprises sending a Radio Resource Control (RRC) message on a common control channel (CCCH) for random access, and wherein the sending a reserved channel identifier comprises sending a reserved logical channel identifier (LCID) to indicate the RRC message being sent on the CCCH.

3. The method of claim 2, wherein the RRC message comprises an RRC Connection Re-establishment Request message for RRC connection re-establishment or an RRC Connection Request message for attachment or subsequent access.

4. The method of claim 2, wherein the reserved LCID has a value of zero.

5. The method of claim 2, further comprising:

generating a Medium Access Control (MAC) service data unit (SDU) comprising the RRC message;

generating a MAC sub-header comprising the reserved LCID; and

generating a MAC protocol data unit (PDU) comprising the MAC sub-header and the MAC SDU.

6. A method for wireless communication, comprising:

sending a message in a protocol data unit (PDU), the message being sent on a control channel for random access by a user equipment (UE); and

sending additional information in the PDU if the PDU can accommodate the additional information.

7. The method of claim 6, wherein the additional information comprises at least one of a buffer status report for the UE, a power headroom report for the UE, data for a dedicated control channel, and data for a dedicated traffic channel.

8. The method of claim 6, wherein the PDU has a variable size determined based on an uplink grant for the UE.

9. The method of claim 6, further comprising:

padding the PDU, if needed, to fill the PDU.

10. The method of claim 6, wherein the message comprises a Radio Resource Control (RRC) message sent on a common control channel (CCCH) for random access by the UE, and wherein the PDU comprises a Medium Access Control (MAC) PDU.

11. The method of claim 10, further comprising:

generating a MAC service data unit (SDU) comprising the RRC message;

generating a MAC control element (CE) comprising a buffer status report or a power headroom report if an uplink grant for the UE can accommodate the MAC SDU and the MAC CE;

generating the MAC PDU comprising the MAC SDU and the MAC CE, if generated; and

sending the MAC PDU for random access by the UE.

12. The method of claim 10, wherein the RRC message comprises padding bits, if needed, to obtain a predetermined length.

13. A method for wireless communication, comprising:

generating a short message authentication code for integrity protection (MAC-I) for a message sent on a control channel for random access by a user equipment (UE),

the short MAC-I having a smaller size than a full MAC-I used for integrity protection of messages sent on a control plane; and

sending the message comprising the short MAC-I for random access by the UE.

14. The method of claim 13, wherein the generating a short MAC-I comprises

generating the short MAC-I for a Radio Resource Control (RRC) message sent on a common control channel (CCCH) for RRC connection re-establishment.

15. The method of claim 13, wherein the short MAC-I has a 16-bit size and the full MAC-I has a 32-bit size.

16. The method of claim 13, wherein the short MAC-I has a variable size determined based on an uplink grant for the UE.

17. A method for wireless communication, comprising:

setting a format field of a message to a first value to indicate a first type of user equipment (UE) identity (ID) being sent in the message or to a second value to indicate a second type of UE ID being sent in the message;

generating the message comprising the format field and a UE ID of the type indicated by the format field; and

sending the message for random access by a UE.

18. The method of claim 17, wherein the first type of UE ID is for attachment by the UE, and wherein the second type of UE ID is for subsequent access by the UE.

19. The method of claim 17, wherein the first type of UE ID comprises a full or partial International Mobile Subscriber Identity (IMSI) or a random ID, and wherein the second type of UE ID comprises an Evolved Packet System Temporary Mobile Subscriber Identity (S-TMSI).

20. The method of claim 19, wherein the full or partial IMSI is conveyed using binary representation instead of hexadecimal representation.

21. The method of claim 19, wherein the partial IMSI comprises a predetermined number of least significant bits (LSBs) of the full IMSI.

22. The method of claim 19, wherein the partial IMSI has a variable size indicated by an IMSI length field in the message.

23. A method for wireless communication, comprising:

generating a Radio Resource Control (RRC) message on a common control channel (CCCH) for random access by a user equipment (UE);

generating a Medium Access Control (MAC) service data unit (SDU) comprising the RRC message;

generating a MAC sub-header comprising a reserved logical channel identifier (LCID) to indicate the RRC message being sent on the CCCH;

generating a MAC protocol data unit (PDU) comprising the MAC sub-header and the MAC SDU; and

sending the MAC PDU for random access by the UE.

24. The method of claim 23, wherein the generating the RRC message comprises generating a short message authentication code for integrity protection (MAC-I) for the RRC message for RRC connection re-establishment, the short MAC-I having a smaller size than a full MAC-I used for integrity protection of messages sent on a control plane.

25. The method of claim 23, wherein the generating the RRC message comprises

setting a format field of the RRC message to a first value to indicate a first type of UE identity (ID) being sent in the RRC message for attachment or to a second value to indicate a second type of UE ID being sent in the RRC message for subsequent access, and

generating the RRC message comprising the format field and a UE ID of the type indicated by the format field.

26. The method of claim 23, further comprising:

generating a MAC control element (CE) comprising a buffer status report or a power headroom report for the UE; and

generating a second MAC sub-header for the MAC CE, wherein the MAC PDU further comprises the second MAC sub-header and the MAC CE.

27. An apparatus for wireless communication, comprising:

at least one processor configured to send a message on a control channel for random access by a user equipment (UE), to send a reserved channel identifier to indicate the message being sent on the control channel, and to send the message and the reserved channel identifier on an uplink shared channel carrying the control channel.

28. The apparatus of claim 27, wherein the at least one processor is configured to send a Radio Resource Control (RRC) message on a common control channel (CCCH) for random access by the UE, and to send a reserved logical channel identifier (LCID) to indicate the RRC message being sent on the CCCH.

29. The apparatus of claim 28, wherein the at least one processor is configured to generate a Medium Access Control (MAC) service data unit (SDU) comprising the RRC message, to generate a MAC sub-header comprising the reserved LCID, and to generate a MAC protocol data unit (PDU) comprising the MAC sub-header and the MAC SDU.

30. The apparatus of claim 29, wherein the at least one processor is configured to generate a MAC control element (CE) comprising a buffer status report or a power headroom report for the UE, to generate a second MAC sub-header for the MAC CE, and to generate the MAC PDU further comprising the second MAC sub-header and the MAC CE.

31. The apparatus of claim 28, wherein the at least one processor is configured to generate a short message authentication code for integrity protection (MAC-I) for the RRC message, the short MAC-I having a smaller size than a full MAC-I used for integrity protection of messages sent on a control plane.

32. The apparatus of claim 28, wherein the at least one processor is configured to set a format field of the RRC message to a first value to indicate a first type of UE identity (ID) being sent in the RRC message for attachment or to a second value to indicate a second type of UE ID being sent in the RRC message for subsequent access, and to generate the RRC message comprising the format field and a UE ID of the type indicated by the format field.

33. An apparatus for wireless communication, comprising:

means for sending a message on a control channel for random access by a user equipment (UE);

means for sending a reserved channel identifier to indicate the message being sent on the control channel; and

means for sending the message and the reserved channel identifier on an uplink shared channel carrying the control channel.

34. The apparatus of claim 33, wherein the means for sending a message on a control channel comprises means for sending a Radio Resource Control (RRC) message on a common control channel (CCCH) for random access by the UE, and wherein the means for sending a reserved channel identifier comprises means for sending a reserved logical channel identifier (LCID) to indicate the RRC message being sent on the CCCH.

35. The apparatus of claim 34, further comprising:

means for generating a Medium Access Control (MAC) service data unit (SDU) comprising the RRC message;

means for generating a MAC sub-header comprising the reserved LCID; and

means for generating a MAC protocol data unit (PDU) comprising the MAC sub-header and the MAC SDU.

36. The apparatus of claim 35, further comprising:

means for generating a MAC control element (CE) comprising a buffer status report or a power headroom report for the UE; and

means for generating a second MAC sub-header for the MAC CE, wherein the MAC PDU further comprises the second MAC sub-header and the MAC CE.

37. The apparatus of claim 34, further comprising:

means for generating a short message authentication code for integrity protection (MAC-I) for the RRC message, the short MAC-I having a smaller size than a full MAC-I used for integrity protection of messages sent on a control plane.

38. The apparatus of claim 34, further comprising:

means for setting a format field of the RRC message to a first value to indicate a first type of UE identity (ID) being sent in the RRC message for attachment or to a second value to indicate a second type of UE ID being sent in the RRC message for subsequent access; and

means for generating the RRC message comprising the format field and a UE ID of the type indicated by the format field.

39. A computer program product, comprising:

a computer-readable medium comprising:

code for causing at least one computer to send a message on a control channel for random access by a user equipment (UE),

code for causing the at least one computer to send a reserved channel identifier to indicate the message being sent on the control channel, and

code for causing the at least one computer to send the message and the reserved channel identifier on an uplink shared channel carrying the control channel.

CLAIMS

1. A method for wireless communication, comprising:

generating, at a user equipment (UE), a Radio Resource Control (RRC) message on a common control channel (CCCH), the RRC message including a type field and a UE ID of a type indicated by the type field, the RRC message having a fixed length and being transmitted without a length indicator;

generating, at the UE, a reserved logical channel identifier (LCID) to indicate the RRC message being sent on the CCCH mapped to an uplink shared channel;

setting, at the UE, the type field of the RRC message to a first value to indicate a first type of user equipment (UE) identity (ID) having a first length being sent in the RRC message or to a second value to indicate a second type of UE ID having a second length being sent in the RRC message, the first type of UE ID for attachment by the UE and the second type of UE ID for connection re-establishment by the UE;

when the RRC message is for connection re-establishment, at the UE:

generating a short message authentication code for integrity protection (MAC-I) for the RRC message, the short MAC-I having a smaller size than a full MAC-I used for integrity protection of messages sent on a control plane;

generating a MAC service data unit (SDU) including the RRC message;

generating a MAC sub-header including the reserved logical channel identifier (LCID); and

generating a MAC protocol data unit (PDU) including the MAC sub-header and the MAC SDU; and

sending, at the UE, the RRC message and the reserved LCID on the uplink shared channel carrying the CCCH as a first scheduled transmission responsive to an uplink grant conveyed to the UE by a base station.

2. The method of claim **1**, wherein the reserved LCID has a value of zero.

3. The method of claim **1**, wherein the first type of UE ID includes a full or partial International Mobile Subscriber Identity (IMSI) or a random ID, and wherein the second type of UE ID includes an Evolved Packet System Temporary Mobile Subscriber Identity (S-TMSI).

4. The method of claim **3**, wherein the full or partial IMSI is conveyed using binary representation instead of hexadecimal representation.

5. The method of claim **3**, wherein the partial IMSI includes a predetermined number of least significant bits (LSBs) of the full IMSI.

6. The method of claim **3**, wherein the partial IMSI has a variable size indicated by an IMSI length field in the message.

7. The method of claim **1**, wherein the generating the RRC message includes

generating the RRC message including the type field and a UE ID of the type indicated by the type field.

8. The method of claim **1**, further including:

generating a MAC control element (CE) including a buffer status report or a power headroom report for the UE; and

generating a second MAC sub-header for the MAC CE, wherein the MAC PDU further includes the second MAC sub-header and the MAC CE.

9. A method for wireless communication, comprising:

generating, at a user equipment (UE), a Radio Resource Control (RRC) message in a protocol data unit (PDU), the RRC message being sent on a common control channel (CCCH), and the RRC message including a type field and a UE ID of a type indicated by the type field, the RRC message having a fixed length and being transmitted without a length indicator; and

setting, at the UE, the type field of the RRC message to a first value to indicate a first type of user equipment (UE) identity (ID) having a first length being sent in the RRC message or to a second value to indicate a second type of UE ID having a second length being sent in the RRC message, the first type of UE ID for attachment by the UE and the second type of UE ID for connection re-establishment by the UE;

when the RRC message is for connection re-establishment, at the UE:

generating a short message authentication code for integrity protection (MAC-I) for the RRC message, the short MAC-I having a smaller size than a full MAC-I used for integrity protection of messages sent on a control plane;

generating a MAC service data unit (SDU) including the RRC message;

generating a MAC sub-header including the reserved logical channel identifier (LCID); and

generating a MAC protocol data unit (PDU) including the MAC sub-header and the MAC SDU;

determining, at the UE, if the PDU can accommodate additional information based on an uplink grant for the PDU;

sending, at the UE, the RRC message and the reserved LCID on the uplink shared channel carrying the CCCH as a first scheduled transmission and the additional information in the PDU with the RRC message when the PDU can accommodate the additional information, wherein the additional information includes a buffer status report for the UE.

10. The method of claim **9**, wherein the additional information further includes one of a power headroom report for the UE, data for a dedicated control channel, and data for a dedicated traffic channel.

11. The method of claim **9**, wherein the PDU has a variable size determined based on the uplink grant for the UE.

12. The method of claim **9**, further including:

padding the PDU, if needed, to fill the PDU.

13. The method of claim **9**, wherein the PDU includes a Medium Access Control (MAC) PDU.

14. The method of claim **13**, further including:

generating a MAC control element (CE) including a buffer status report or a power headroom report if the uplink grant for the UE can accommodate the MAC SDU and the MAC CE;

generating the MAC PDU including the MAC SDU and the MAC CE, if generated; and

sending the MAC PDU for random access by the UE.

15. The method of claim **13**, wherein the RRC message includes padding bits, if needed, to obtain a predetermined length.

16. An apparatus for wireless communication, comprising:

at least one processor configured:

to generate a Radio Resource Control (RRC) message of on a common control channel (CCCH), and the RRC message including a type field and a user equipment (UE) ID of a type indicated by the type field, the RRC message having a fixed length and being transmitted without a length indicator,

to generate a reserved logical channel identifier (LCID) to indicate the RRC message being sent on the CCCH mapped to an uplink shared channel,

to set the type field of the RRC message to a first value to indicate a first type of user equipment (UE) identity (ID) having a first length being sent in the RRC message or to a second value to indicate a second type of UE ID having a second length being sent in the RRC message, the first type of UE ID for attachment by the UE and the second type of UE ID for connection re-establishment by the UE;

when the RRC message is for connection re-establishment:

to generate a short message authentication code for integrity protection (MAC-I) for the RRC message, the short MAC-I having a smaller size than a full MAC-I used for integrity protection of messages sent on a control plane;

to generate a MAC service data unit (SDU) including the RRC message;

to generate a MAC sub-header including the reserved logical channel identifier (LCID); and

to generate a MAC protocol data unit (PDU) including the MAC sub-header and the MAC SDU; and

to send the RRC message and the reserved LCID on an uplink shared channel carrying the CCCH as a first scheduled transmission with responsive to an uplink grant received by the UE.

17. The apparatus of claim **16**, wherein the at least one processor is configured to generate a MAC control element (CE) including a buffer status report or a power headroom report for the UE, to generate a second MAC sub-header for the MAC CE, and to generate the MAC PDU further including the second MAC sub-header and the MAC CE.

18. An apparatus for wireless communication, comprising:

means for generating a Radio Resource Control (RRC) message of on a common control channel (CCCH), and the RRC message including a type field and a user equipment (UE) ID of a type indicated by the type field, the RRC message having a fixed length and being transmitted without a length indicator;

means for generating a reserved logical channel identifier (LCID) to indicate the RRC message being sent on the CCCH mapped to an uplink shared channel;

means for setting the type field of the RRC message to a first value to indicate a first type of user equipment (UE) identity (ID) having a first length being sent in the RRC message or to a second value to indicate a second type of UE ID having a second length being sent in the RRC message, the first type of UE ID for attachment by the UE and the second type of UE ID for connection re-establishment by the UE;

when the RRC message is for connection re-establishment:

means for generating a short message authentication code for integrity protection (MAC-I) for the RRC message, the short MAC-I having a smaller size than a full MAC-I used for integrity protection of messages sent on a control plane;

means for generating a MAC service data unit (SDU) including the RRC message;

means for generating a MAC sub-header including the reserved logical channel identifier (LCID); and

means for generating a MAC protocol data unit (PDU) including the MAC sub-header and the MAC SDU; and

means for sending the RRC message and the reserved LCID on an uplink shared channel carrying the CCCH as a first scheduled transmission with responsive to an uplink grant conveyed to the UE by a base station.

19. The apparatus of claim **18**, further including:

means for generating a MAC control element (CE) including a buffer status report or a power headroom report for the UE; and

means for generating a second MAC sub-header for the MAC CE, wherein the MAC PDU further includes the second MAC sub-header and the MAC CE.

20. A non-transitory computer-readable medium comprising:

code for causing at least one computer to generate a Radio Resource Control (RRC) message of on a common control channel (CCCH), and the RRC message including a type field and a user equipment (UE) ID of a type indicated by the type field, the RRC message having a fixed length and being transmitted without a length indicator,

code for causing the at least one computer to generate a reserved logical channel identifier (LCID) to indicate the RRC message being sent on the CCCH mapped to an uplink shared channel,

code for setting the type field of the RRC message to a first value to indicate a first type of user equipment (UE) identity (ID) having a first length being sent in the RRC message or to a second value to indicate a second type of UE ID having a second length being sent in the RRC message, the first type of UE ID for attachment by the UE and the second type of UE ID for connection re-establishment by the UE;

when the RRC message is for connection re-establishment:

code for generating a short message authentication code for integrity protection (MAC-I) for the RRC message, the short MAC-I having a smaller size than a full MAC-I used for integrity protection of messages sent on a control plane;

code for generating a MAC service data unit (SDU) including the RRC message;

code for generating a MAC sub-header including the reserved logical channel identifier (LCID); and

code for generating a MAC protocol data unit (PDU) including the MAC sub-header and the MAC SDU; and

code for causing the at least one computer to send the RRC message and the reserved LCID on an uplink shared channel carrying the CCCH as a first scheduled transmission with responsive to an uplink grant allocated to the UE.