

CLAIMS

1. A communication apparatus, comprising:
circuitry, which, in operation, generates a control signal including a plurality of user specific fields, each of the plurality of user specific fields including an ID field and indicating that at least one resource unit (RU) is available for a corresponding terminal station; and
a transmitter, which is coupled to the circuitry and which, in operation, transmits the control signal, wherein each of the ID fields indicates one of a plurality of Association IDs (AIDs) for scheduled access or one of a plurality of IDs for random access,
wherein values of the plurality of IDs for random access are different from any of values of the plurality of AIDs for scheduled access, and each of the values of the plurality of IDs for random access indicates a state between the communication apparatus and the corresponding terminal station.
2. The communication apparatus according to claim 1, wherein one of the values of the plurality of IDs for random access indicates a terminal station not associated with the communication apparatus.
3. The communication apparatus according to claim 1, wherein the values of the plurality of IDs for random access include at least one of 0 and integers from 2008 to 2047.
4. The communication apparatus according to claim 1, wherein when the ID field indicates one of the plurality of IDs for random access, the ID field indicates one or more resource units (RUs), one of which is randomly selected by the corresponding terminal station.
5. The communication apparatus according to claim 1, wherein the control signal includes a common information field, wherein the common information field includes a trigger type field indicating a type of the control signal.
6. The communication apparatus according to claim 1, wherein the user

specific fields include a Target RSSI field indicating target reception power of a signal transmitted in response to the control signal.

7. The communication apparatus according to claim 1, wherein when the ID field indicates one of the plurality of IDs for random access, the control signal includes a value corresponding to a traffic type of information transmitted through random access.

8. The communication apparatus according to claim 1, wherein each of the value of the plurality of IDs for random access is associated with communication condition information between the communication apparatus and the corresponding terminal station, wherein the communication condition information indicates at least one of an uplink transmission buffer amount, path loss, reception quality, received signal strength indicator (RSSI), and interference power.

9. The communication apparatus according to claim 1, wherein each of the values of the plurality of IDs for random access is associated with a type of information transmitted through random access, with a transmission power class of the corresponding terminal station, or with setting accuracy of transmission power required for the corresponding terminal station.

10. The communication apparatus according to claim 1, wherein the user specific fields include an RU allocation field indicating at least one RU that is allocated to the corresponding terminal station.

11. A communication method implemented by a communication apparatus, the method comprising:

generating a control signal including a plurality of user specific fields, each of the plurality of user specific fields including an ID field and indicating that at least one resource unit (RU) is available for a corresponding terminal station; and

transmitting the control signal, wherein each of the ID fields indicates one of a plurality of Association IDs (AIDs) for scheduled access or one of a plurality of IDs for random access,

wherein values of the plurality of IDs for random access are different from

any of values of the plurality of AIDs for scheduled access, and each of the values of the plurality of IDs for random access indicates a state between the communication apparatus and the corresponding terminal station.

12. An integrated circuit to control a process in a communication apparatus, the process comprising:

generating a control signal including a plurality of user specific fields, each of the plurality of user specific fields including an ID field and indicating that at least one resource unit (RU) is available for a corresponding terminal station; and

transmitting the control signal, wherein each of the ID fields indicates one of a plurality of Association IDs (AIDs) for scheduled access or one of a plurality of IDs for random access,

wherein values of the plurality of IDs for random access are different from any of values of the plurality of AIDs for scheduled access, and each of the values of the plurality of IDs for random access indicates a state between the communication apparatus and the corresponding terminal station.

13. A terminal station, comprising:

a receiver, which, in operation, receives from a communication apparatus a control signal including a plurality of user specific fields, each of the plurality of user specific fields including an ID field and indicating that at least one resource unit (RU) is available for the terminal station, wherein each of the ID fields indicates one of a plurality of Association IDs (AIDs) for scheduled access or one of a plurality of IDs for random access, values of the plurality of IDs for random access are different from any of values of the plurality of AIDs for scheduled access, and each of the values of the plurality of IDs for random access indicates a state between the communication apparatus and the corresponding terminal station; and

a transmitter which in operation, transmits data using the at least one RU.

14. The terminal station according to claim 13, wherein one of the values of the plurality of IDs for random access indicates that the terminal station is not associated with the communication apparatus.

15. The terminal station according to claim 13, wherein the values of the plurality of IDs for random access include at least one of 0 and integers from 2008 to 2047.

16. The terminal station according to claim 13, wherein when the ID field indicates one of the plurality of IDs for random access, the ID field indicates one or more resource units (RUs), one of which is randomly selected by the terminal station.

17. The terminal station according to claim 13, wherein the control signal includes a common information field, wherein the common information field includes a trigger type field indicating a type of the control signal.

18. The terminal station according to claim 13, wherein the user specific fields include a Target RSSI field indicating target reception power of a signal transmitted in response to the control signal.

19. The terminal station according to claim 13, wherein when the ID field indicates one of the plurality of IDs for random access, the control signal includes a value corresponding to a traffic type of information transmitted through random access.

20. The terminal station according to claim 13, wherein each of the value of the plurality of IDs for random access is associated with communication condition information between the communication apparatus and the terminal station, wherein the communication condition information indicates at least one of an uplink transmission buffer amount, path loss, reception quality, received signal strength indicator (RSSI), and interference power.

21. The terminal station according to claim 13, wherein each of the values of the plurality of IDs for random access is associated with a type of information transmitted through random access, with a transmission power class of the terminal station, or with setting accuracy of transmission power required for the terminal station.

22. The terminal station according to claim 13, wherein the user specific fields include an RU allocation field indicating at least one RU that is allocated to the terminal station.

23. A communication method implemented by a terminal station, the method comprising:

receiving from a communication apparatus a control signal including a plurality of user specific fields, each of the plurality of user specific fields including an ID field and indicating that at least one resource unit (RU) is available for the terminal station, wherein each of the ID fields indicates one of a plurality of Association IDs (AIDs) for scheduled access or one of a plurality of IDs for random access; and

transmitting data using the at least one RU,

wherein values of the plurality of IDs for random access are different from any of values of the plurality of AIDs for scheduled access, and each of the values of the plurality of IDs for random access indicates a state between the communication apparatus and the terminal station.

24. An integrated circuit to control a process in a terminal station, the process comprising:

receiving from a communication apparatus a control signal including a plurality of user specific fields, each of the plurality of user specific fields including an ID field and indicating that at least one resource unit (RU) is available for the terminal station, wherein each of the ID fields indicates one of a plurality of Association IDs (AIDs) for scheduled access or one of a plurality of IDs for random access; and

transmitting data using the at least one RU,

wherein values of the plurality of IDs for random access are different from any of values of the plurality of AIDs for scheduled access, and each of the values of the plurality of IDs for random access indicates a state between the communication apparatus and the terminal station.