CLAIMS

1. A communication apparatus comprising:

circuitry, which in operation, determines a random access radio network temporary identifiers (RA-RNTI) based on a valid Random Access Channel Occasions (RO) within a first RO group, the first RO group being determined from a plurality of ROs[OGAWA1.1] including valid ROs and invalid ROs;

a transmitter, which in operation, transmits repetitions of a preamble on at least one RO of the first RO group; and

a receiver, which in operation, receives downlink control information (DCI) with cyclic redundancy check (CRC) scrambled by the RA-RNTIs in response to a transmission of the repetitions of the preamble.

2. The communication apparatus of claim 1, wherein the RA-RNTI is determined based on a time index and a frequency index of the valid RO.

3. The communication apparatus of claim 1, wherein ROs within the first RO group are assigned in a same frequency .

4. The communication apparatus of claim 1, wherein a frequency of ROs within the first RO group is different from a frequency of another ROs within a second RO group.

5. The communication apparatus of claim 1, wherein a number of only valid ROs in the first RO group is counted for a number of the repetitions of the preamble.

6. The communication apparatus of claim 5, wherein the number of the repetitions of the preamble is configured from a plurality values.

7. A communication method comprising:

determining a random access radio network temporary identifiers (RA-RNTI) based on a valid Random Access Channel Occasions (RO) within a first RO group, the first RO group being determined from a plurality of ROs[OGAWA1.1] including valid ROs and invalid ROs;

transmitting repetitions of a preamble on at least one RO of the first RO group; and

receiving a downlink control information (DCI) with cyclic redundancy check (CRC) scrambled by the RA-RNTIs in response to a transmission of the repetitions of the preamble.

8: A base station comprising:

circuitry, which in operation, determines a random access radio network temporary identifiers (RA-RNTI) based on a valid Random Access Channel Occasions (RO) within a first RO group, the first RO group being determined from a plurality of ROs including valid ROs and invalid ROs;

a receiver, which in operation, receives repetitions of a preamble on at least one RO of the first RO group; and

a transmitter, which in operation, transmits downlink control information (DCI) with cyclic redundancy check (CRC) scrambled by the RA-RNTI in response to a reception of the repetitions of the preamble.

9: The base station of claim 8, wherein the RA-RNTI is determined based on a time index and a frequency index of the valid RO.

10: The base station of claim 8, wherein ROs within the first RO group are assigned in a same frequency.

11: The base station of claim 8, wherein a frequency of ROs within the first RO group is different from a frequency of ROs within a second RO group.

12: The base station of claim 8, wherein a number of only valid ROs in the first RO group is counted for a number of the repetitions of the preamble.

13: The base station of claim 12, wherein the number of the repetitions of the preamble is configured from a plurality values.

14: A communication method comprising:

determining a random access radio network temporary identifiers (RA-RNTI) based on a valid Random Access Channel Occasions (RO) within a first RO group, the first RO group being determined from a plurality of ROs including valid ROs and invalid ROs;

receiving repetitions of a preamble on at least one RO; and

transmitting downlink control information (DCI) with cyclic redundancy check (CRC) scrambled by the RA-RNTI in response to a reception of the repetitions of the preamble.

15: An integrated circuit comprising:

determination circuitry, which in operation, controls a determination of a random access radio network temporary identifiers (RA-RNTI) based on a valid Random Access Channel Occasions (RO) within a first RO group, the first RO group being determined from a plurality of ROs including valid ROs and invalid ROs;

transmission circuitry, which in operation, controls of a transmission of repetitions of a preamble on at least one of the plurality of ROs; and

reception circuitry, which in operation, controls of a reception of downlink control information (DCI) with cyclic redundancy check (CRC) scrambled by the RA-RNTI in response to a transmission of the repetitions of the preamble.

16: An integrated circuit comprising:

determination circuitry, which in operation, controls a determination of a random access radio network temporary identifiers (RA-RNTI) based on a valid Random Access Channel Occasions (RO) within a first RO group, the first RO group being determined from a plurality of ROs including valid ROs and invalid ROs;

reception circuitry, which in operation, controls of a reception of repetitions of a preamble on at least one RO; and

transmission circuitry, which in operation, controls of transmission of downlink control information (DCI) with cyclic redundancy check (CRC) scrambled by the RA-RNTI in response to a reception of the repetitions of the preamble.