CLAIMS

1. A communication apparatus, comprising:

circuitry, which in operation, determines at least one first Random Access Channel (RACH) occasion (RO) group, wherein the at least one first RO group comprises a plurality of ROs that correspond to a plurality of PRACH transmissions in a multi-physical RACH (PRACH) transmission from the communication apparatus; and

a transmitter, which in operation, transmits a preamble in each of the plurality of ROs of the at least one first RO group.

2. The communication apparatus of claim 1, wherein the plurality of ROs included in the first RO group are same or different from a plurality of ROs included in another RO group used by another communication apparatus.

3. The communication apparatus of claim 1, wherein the circuitry is configured to determine the at least one first RO group based on a higher layer parameter.

4. The communication apparatus of claim 1, wherein the circuitry is configured to determine one or more second RO groups based on a higher layer parameter, each of the one or more second RO groups comprising one or more ROs that are for use among one or more communication apparatuses, the one or more second RO groups being commonly determined in a serving cell.

5. The communication apparatus of claim 1, wherein the plurality of ROs included in the first RO group are assigned to different times in a same frequency.

6. The communication apparatus of claim 4, wherein the second RO group is set next to the first RO group in the frequency domain.

7. The communication apparatus of claim 1, wherein the plurality of ROs included in the first RO group correspond to a same preamble.

8. The communication apparatus of claim 1, wherein an RO of the plurality of ROs included in the first RO group is only associated with the first RO group.

9. The communication apparatus of claim 1 or 2, wherein the circuitry is further configured to: determine one or more second RO groups, the one or more second RO groups being commonly determined in a serving cell based on one or more ROs located in close proximity to one another in a time domain.

10. The communication apparatus of claim 1, wherein a number of the plurality of ROs included in one of the at least one first RO group is indicated by a higher layer signaling.

11. The communication apparatus of claim 1 or 2, wherein the circuitry is further configured to determine the at least one first RO group based on a set of ROs located at a same frequency resource allocation.

12. The communication apparatus of claim 1, wherein each of the at least one first RO group is associated with one or more synchronization signal block (SSB) indices.

13. The communication apparatus of claim 12, wherein each of the at least one first RO group is associated with two or more synchronization signal block (SSB) indices.

14. A base station comprising:

circuitry, which in operation, generates a signal comprising information of at least one first Random Access Channel (RACH) occasion (RO) group, wherein the at least one first RO group comprises a plurality of ROs that correspond to a plurality of multi-physical RACH (PRACH) transmissions in a multi-PRACH transmission from a communication apparatus;

a transmitter, which in operation, transmits the signal to the communication apparatus;

a receiver, which in operation, receives at least one multi-PRACH transmission from the communication apparatus, the at least one multi-PRACH transmission corresponding to the at least one first RO group; and

the circuitry detects a preamble in each of the at least one multi-PRACH transmission.

15. The base station of claim 14, wherein the circuitry is further configured to generate a signal comprising information of at least one first RO group and one

or more second RO groups, the one or more second RO groups being commonly determined in a serving cell; and the transmitter is configured to transmit the signal to the communication apparatus.

16. A communication method, comprising:

determining at least one first Random Access Channel (RACH) occasion (RO) group, wherein the at least one first RO group comprises a plurality of ROs that correspond to a plurality of PRACH transmissions in a multi-PRACH transmission from a communication apparatus; and

transmitting a preamble in each of the plurality of ROs of the at least one first RO group.

18. A communication method comprising:

generating a signal comprising information of at least one first Random Access Channel (RACH) occasion (RO) group, wherein the at least one first RO group comprises a plurality of ROs that correspond to a plurality of multi-physical RACH (PRACH) transmissions in a multi-PRACH transmission from a communication apparatus;

transmitting the signal to the communication apparatus;

receiving at least one multi-PRACH transmission from the communication apparatus, the at least one multi-PRACH transmission corresponding to the at least one first RO group; and

detecting a preamble in each of the at least one multi-PRACH transmission.

19. An integrated circuit, comprising:

control circuitry, which in operation, determines at least one first Random Access Channel (RACH) occasion (RO) group, wherein the at least one first RO group comprises a plurality of ROs that correspond to a plurality of PRACH transmissions in a multi-physical RACH (PRACH) transmission from the communication apparatus; and

transmission circuitry, which in operation, transmits a preamble in each of the plurality of ROs of the at least one first RO group.

20. An integrated circuit, comprising:

control circuitry, which in operation, generates a signal comprising information of at least one first Random Access Channel (RACH) occasion (RO)

group, wherein the at least one first RO group comprises a plurality of ROs that correspond to a plurality of multi-physical RACH (PRACH) transmissions in a multi-PRACH transmission from a communication apparatus;

transmission circuitry, which in operation, transmits the signal to the communication apparatus;

reception circuitry, which in operation, receives at least one multi-PRACH transmission from the communication apparatus, the at least one multi-PRACH transmission corresponding to the at least one first RO group; and

the control circuitry detects a preamble in each of the at least one multi-PRACH transmission.