

CLAIMS

1. A method, performed by a wireless device in a wireless network, the method comprising:
 - selecting (S11) a Random Access Channel, RACH, resource associated with a RACH configuration for random access message repetition with a pre-determined number of repetitions for a single random access attempt
 - transmitting (S14), for the single random access attempt, a random access message with the pre-determined number of repetitions using the selected RACH resource;
 - determining (S12) a random access message transmission power based on the pre-determined number of random access message repetitions of the RACH configuration;
 - monitoring (S15) the Random Access Response window for one or more responses to the single random access attempt; and
 - transmitting (S14), for a retry random access attempt, a random access message with a retry number of repetitions when the single random access attempt fails, wherein the retry random access message is transmitted with a changed preamble sequence.
2. The method of claim 1, wherein the RACH resource is selected based on channel quality measurements and RACH configuration for the pre-determined number of repetitions.
3. The method of claim 1 or 2, wherein the RACH configuration comprises a number of repetitions and/or settings for frequency hopping.
4. The method of any of claims 1 to 3, further comprising:
 - receiving (S10) information on RACH resources available for random access message repetition, wherein the received information comprises an associated RACH configuration for each RACH resource.
5. The method of claim 4, wherein the received information further comprises frequency hopping information comprising a list of RACH resources available for random access message transmission during a single random access attempt and a frequency hopping period.

6. The method of claim 5, wherein the frequency hopping information further comprises a RACH hopping pattern.
7. The method of any claims 1 to 6, further comprising:
 - determining (S13a) a repetition starting point based on the predetermined number of random access message repetitions.
8. The method of claim 7, wherein the repetition starting point is determined as a system frame number, SFN.
9. The method of any of the preceding claims, further comprising:
 - determining (S13b) a Random Access Response window based on the transmit format of the random access response.
10. The method of claim 10, further comprising, when the single random access attempt fails, performing (S16) one or both of the following for the retry random access attempt: (a) incrementing (S16a) the random access message transmission power and/or (b) selecting (S16b) a retry number of repetitions greater than the pre-determined number of repetitions.
11. The method of any of the preceding claims, wherein the random access message comprises a Physical Random Access Channel, PRACH, preamble.
12. A computer readable storage medium, having stored thereon a computer program which, when executed in a wireless device, causes the wireless device to execute the methods of any of claims 1-11.
13. A wireless device (120) for a wireless network, the wireless device comprising:

- a communication unit (122) configured to communicate with a network node in a cell of said wireless network,
- a processing circuitry (121) configured to cause the wireless device (120) to:
 - select a Random Access Channel, RACH, resource associated with a RACH configuration for random access message repetition with a pre-determined number of repetitions for a single random access attempt
 - transmit, for the single random access attempt, a random access message to said wireless network with the pre-determined number of repetitions using the selected RACH resource;
 - determine a random access message transmission power based on the pre-determined number of random access message repetitions of the RACH configuration;
 - monitor the Random Access Response window for one or more responses to the single random access attempt; and
 - transmit, for a retry random access attempt, a random access message with a retry number of repetitions when the single random access attempt fails, wherein the retry random access message is transmitted with a changed preamble sequence.

14. The wireless device (120) of claim 13, wherein the processing circuitry (121) comprises a processor (123a) and a memory (123b) containing instructions executable by said processor.