

CLAIMS:

Claim 1. An apparatus, comprising:

- at least one processor; and
- at least one memory storing a computer program;

in which the at least one memory with the computer program is configured with the at least one processor to cause the apparatus to at least:

in response to when resuming data transmission/reception upon activation of a serving cell, to enable carrier aggregation, reporting to a network access node an out of range report for the serving cell for a certain period before a valid channel quality indication result is available if a periodic channel quality indication resource is configured for the serving cell, or if an aperiodic channel quality indication for the serving cell is requested from the network access node; where a minimum requirement is defined for the certain time period before the valid channel quality indication result is reported; and

after the certain time period reporting to the network access node a valid channel quality indication result for the serving cell, where the valid channel quality indication result is reported no later than the minimum requirement.

~~Claim 2. The apparatus according to claim 1, where a minimum requirement is defined for the certain time period before the valid channel quality indication result is reported.~~

~~Claim 3. The apparatus according to claim 2, where the valid channel quality indication result is reported no later than the minimum requirement.~~

~~Claim 24. The apparatus according to claim 1, where the apparatus communicates with the network access node in accordance with transmission mode 9.~~

~~Claim 35. The apparatus according to claim 1, where the valid channel quality indication result is available until a first subframe that has a reference signal is available after activation.~~

~~Claim 46. The apparatus according to claim 35, where the reference signal is a channel state~~

information reference signal for transmission mode 9 and is a cell-specific reference signal for transmission modes other than transmission mode 9.

Claim 57. The apparatus according to claim 1, wherein when a serving cell is activated all configured cells, or only configured and activated cells, report an out of range channel quality indication value to the network access node until the apparatus has the valid channel quality indication result.

Claim 68. The apparatus according to claim 1, further comprising:
a deactivation timer and a power headroom report trigger for determining whether a gap before the resuming data transmission/reception indicates a real activation of a deactivated serving cells or reactivation of the serving cell.

Claim 79. The apparatus according to claim 1, where the certain time period includes processing time for a channel quality indication measurement.

Claim 108. A method comprising:

in response to when resuming data transmission/reception upon activation of a serving cell, to enable carrier aggregation, reporting to a network access node an out of range report for the serving cell for a certain period before a valid channel quality indication result is available if a periodic channel quality indication resource is configured for the serving cell, or if an aperiodic channel quality indication for the serving cell is requested from the network access node, where a minimum requirement is defined for the certain time period before the valid channel quality indication result is reported; and

after the certain time period reporting to the network access node a valid channel quality indication result for the serving cell, wherein the valid channel quality indication result is reported no later than the minimum requirement.

Claim 11. — ~~The method according to claim 10, where a minimum requirement is defined for the certain time period before the valid channel quality indication result is reported.~~

~~Claim 12.~~ The method according to ~~claim 11~~, where the valid channel quality indication result is reported no later than the minimum requirement.

Claim ~~13~~9. The method according to claim ~~8~~10, where the step of reporting to the network access node is in accordance with transmission mode 9.

~~Claim 104.~~ The method according to claim ~~8~~10, where the valid channel quality indication result is available until a first subframe that has a reference signal is available after activation.

Claim ~~11~~5. The method according to claim ~~104~~, where the reference signal is a channel state information reference signal for transmission mode 9 and is a cell-specific reference signal for transmission modes other than transmission mode 9.

Claim ~~12~~6. The method according to claim ~~8~~10, wherein when a serving cell is activated all configured cells or only configured and activated cells report an out of range channel quality indication value to the network access node until the user equipment has the valid channel quality indication result.

Claim ~~13~~7. The method according to claim ~~8~~10, further comprising a step of:
determining whether a gap before the resuming data transmission/reception indicates a real activation of a deactivated serving cells or reactivation of the serving cell by employing a deactivation timer and a power headroom report trigger.

Claim ~~14~~8. The method according to claim ~~108~~, where the certain time period includes processing time for a channel quality indication measurement.

Claim ~~15~~9. An apparatus, comprising:

at least one processor; and

at least one memory storing a computer program;

in which the at least one memory with the computer program is configured with the at least one processor to cause the apparatus to at least:

~~a receiver for receiving~~ receive a radio transmission from a user equipment, ~~the user equipment being configured to, when resuming data transmission/reception upon activation of a serving cell, to enable carrier aggregation, the radio transmission reporting to the apparatus an out of range report for the serving cell for a certain period before a valid channel quality indication result is available if a periodic channel quality indication resource is configured for the serving cell, or if an aperiodic channel quality indication for the serving cell is requested from the apparatus, where a minimum requirement is defined for the certain time period before the valid channel quality indication result is reported to the apparatus from the user equipment;~~ and

~~after the certain time period, receiving from the user equipment a report of reporting to the apparatus a valid channel quality indication result for the serving cell, where the valid channel quality indication result is reported to the apparatus from the user equipment no later than the minimum requirement.~~

~~Claim 20. — The apparatus according to claim 19, where a minimum requirement is defined for the certain time period before the valid channel quality indication result is reported to the apparatus from the user equipment.~~

~~Claim 21. — The apparatus according to claim 20, where the valid channel quality indication result is reported to the apparatus from the user equipment no later than the minimum requirement.~~

~~Claim 1622. The apparatus according to claim 159, where the user equipment communicates with the apparatus in accordance with transmission mode 9.~~

~~Claim 1723. The apparatus according to claim 159, where the valid channel quality indication result is available until a first subframe that has a reference signal is available after activation.~~

~~Claim 1824. The apparatus according to claim 1723, where the reference signal is a channel state information reference signal for transmission mode 9 and is a cell-specific reference signal for transmission modes other than transmission mode 9.~~

Claim 1925. The apparatus according to claim 1549, wherein when a serving cell is activated all configured cells, or only configured and activated cells, report an out of range channel quality indication value to the apparatus until the user equipment has the valid channel quality indication result.

Claim 206. The apparatus according to claim 159, wherein the user equipment is further configured to determine whether a gap before the resuming data transmission/reception indicates a real activation of a deactivated serving cells or reactivation of the serving cell by employing a deactivation timer and a power headroom report trigger.

Claim 217. The apparatus according to claim 159, where the certain time period includes processing time for a channel quality indication measurement.

Claim 228. A method comprising:

in a network access node receiving from a user equipment, ~~when the user equipment resumes-resuming~~ data transmission/reception upon activation of a serving cell, to enable carrier aggregation, an out of range report for the serving cell for a certain period before a valid channel quality indication result is available if a periodic channel quality indication resource is configured for the serving cell, or if an aperiodic channel quality indication for the serving cell is requested from the network access node, where a minimum requirement is defined for the certain time period before the valid channel quality indication result is reported; and

after the certain time period receiving from the user equipment a valid channel quality indication result report for the serving cell, where the valid channel quality indication result is reported no later than the minimum requirement.

Claim 29.——~~The method according to claim 28, where a minimum requirement is defined for the certain time period before the valid channel quality indication result is reported.~~

Claim 30.——~~The method according to claim 28, where the valid channel quality indication result is reported no later than the minimum requirement.~~

Claim ~~31~~23. The method according to claim ~~30~~22, where the step of reporting to the network access node is in accordance with transmission mode 9.

Claim ~~24~~32. The method according to claim ~~28~~22, where the valid channel quality indication result is available until a first subframe that has a reference signal is available after activation.

Claim ~~25~~33. The method according to claim ~~24~~32, where the reference signal is a channel state information reference signal for transmission mode 9 and is a cell-specific reference signal for transmission modes other than transmission mode 9.

Claim ~~26~~34. The method according to claim ~~28~~22, wherein when a serving cell is activated all configured cells or only configured and activated cells report an out of range channel quality indication value to the network access node until the user equipment has the valid channel quality indication result.

Claim ~~27~~35. The method according to claim ~~22~~28, where the user equipment determines whether a gap before the resuming data transmission/reception indicates a real activation of a deactivated serving cells or reactivation of the serving cell by employing a deactivation timer and a power headroom report trigger.

Claim ~~28~~36. The method according to claim ~~22~~28, where the certain time period includes processing time for a channel quality indication measurement.

Claim 29. An apparatus, comprising:

at least one processor; and

at least one memory storing a computer program;

in which the at least one memory with the computer program is configured with the at least one processor to cause the apparatus to at least:

in response to resuming data transmission/reception upon activation of a serving cell, to enable carrier aggregation, reporting to a network access node an out of range report for the serving cell for a certain period before a valid channel quality indication result is available if a

periodic channel quality indication resource is configured for the serving cell, or if an aperiodic channel quality indication for the serving cell is requested from the network access node; and
after the certain time period, reporting to the network access node a valid channel quality indication result for the serving cell, where the valid channel quality indication result is available until a first subframe that has a referenced signal is available after activation.

Claim 30. The apparatus according to claim 29, where a minimum requirement is defined for a certain time period before the valid channel quality indication result is reported.

Claim 31. The apparatus according to claim 30, where the valid channel quality indication result is reported no longer than the minimum requirement.

Claim 32. The apparatus according to claim 29, where the apparatus communicates with the network access node in accordance with transmission mode 9.

Claim 33. The apparatus according to claim 29, where the reference signal is a channel state information reference signal for transmission node 9 and is a cell-specific reference signal for transmission modes other than transmission mode 9.

Claim 34. The apparatus according to claim 29, wherein when a serving cell is activated all configured cells, or only configured and activated cells, report an out of range channel quality indication value to the apparatus until the user equipment has the valid channel quality indication result.

Claim 35. The apparatus according to claim 29, further comprising
a deactivation timer and a power headroom report trigger for determining whether a gap before the resuming data transmission/reception indicates a real activation of a deactivated serving cells or reactivation of the serving cell.

Claim 36. The apparatus according to claim 29, where the certain time period includes processing time for a channel quality indication measurement.