scheduling decision is to avoid transmissions over entire frequency ranges, the mobile terminal is still obliged to monitor the according search space sets.

In order to release the mobile terminal from its obligation to monitor all search space sets, the present disclosure proposes transmitting an indication to the mobile terminals that indicates whether or not to skip monitoring individual search space sets. Since the mobile terminal receives this indication before the monitoring is carried out, this improves the energy efficiency of the mobile terminal.

In one general example, the techniques disclosed here feature a mobile terminal for performing downlink receptions or uplink transmissions in a wireless communication system comprising a base station configured with a cell for wideband operation in an unlicensed spectrum with a carrier bandwidth which is divided into a plurality of frequency ranges.

The mobile terminal comprises a processor and a transceiver. The processor, in operation, monitors physical downlink control channel, PDCCH, candidates of a first search space set located in a designated first frequency range from the plurality of frequency ranges.

The transceiver, in operation, receives a downlink control information, DCI, transmitted in the first search space set of the designated first frequency range, wherein the received DCI includes an indication whether or not the mobile terminal is to skip monitoring some specific or all PDCCH candidates in at least one second search space set associated with at least one second frequency range from the plurality of frequency ranges.

And, only if the indication in the received DCI does not indicate to skip monitoring the specific or all PDCCH candidates in the at least one second search space set, the processor, in operation, additionally, monitors the specific or all PDCCH candidates associated with the at least one second frequency range for receiving a DCI including a downlink assignment which is assigning resources for downlink receptions or an uplink grant, which is assigning resources for uplink transmissions.

In an aspect, the present disclosure refers to a communication apparatus comprising;

circuitry, which in operation, maps a first downlink control information (DCI) in a first search space set and maps a second DCI in one or more second search space sets of one or more frequency ranges of the plurality of frequency ranges;

a transmitter, which in operation, transmits the first DCI and the second DCI;

wherein the first DCI includes control information indicating whether the communication apparatus skips monitoring the second DCI in respective ones of the plurality of frequency ranges.

In an aspect, the present disclosure refers to a communication method comprising;

mapping a first downlink control information (DCI) in a first search space set and mapping a second DCI in one or more second search space sets of one or more frequency ranges of the plurality of frequency ranges;

transmitting the first DCI and the second DCI;

wherein the first DCI includes control information indicating whether the communication apparatus skips monitoring the second DCI in respective ones of the plurality of frequency ranges.

It should be noted that general or specific embodiments may be implemented as a system, a method, an integrated circuit, a computer program, a storage medium, or any selective combination thereof.

Additional benefits and advantages of the disclosed embodiments will be apparent from the specification and figures. The benefits and/or advantages may be individually obtained by the various embodiments and features of the specification and drawings, which need not all be provided in order to obtain one or more of such benefits and/or advantages.