

[6] There is thus a need for communication apparatuses and methods that can solve the above mentioned issue. Furthermore, other desirable features and characteristics will become apparent from the subsequent detailed description and the appended claims, taken in conjunction with the accompanying drawings and this background of the disclosure.

## SUMMARY

10 [7] ~~This disclosure presents a~~One non-limiting ~~and exemplary embodiment~~example which facilitates implementation of CORESET#0 for RedCap devices in 5G NR based communications.

[8] In one aspect, the techniques disclosed herein provide a communication apparatus.  
15 ~~For example, the communication apparatus can be a subscriber UE, which may be a normal (non-RedCap, or Rel-15/16/17, or later release) UE, a RedCap UE or other similar types of UE.~~The communication apparatus comprises a receiver, which in operation, receives a physical downlink control channel (PDCCH) on a control resource set zero (CORESET#0) of which time and frequency resources are defined based on a  
20 bandwidth configuration of reduced capability user equipments (RedCap UEs), and receives a system information block type 1 (SIB1) physical downlink shared channel (PDSCH) which is scheduled based on the CORESET#0; and circuitry, which in operation, determines control information and parameters from the PDCCH on CORESET#0 to read SIB1, message 2 (Msg2) PDSCH, as well as message 4 (Msg4) PDSCH for initial access,  
25 handover, or beam failure recovery.

[9] In another aspect, the techniques disclosed herein provide a communication apparatus. ~~For example, t~~he communication apparatus ~~can be~~includes a base station ~~or gNodeB (gNB)~~  
30 resource set zero (CORESET#0) of which time and frequency resources are defined based on a minimum bandwidth configuration associated with one or more UEs in a set of normal (non-RedCap) UEs and the RedCap UEs, generates a physical downlink control channel (PDCCH) on the CORESET#0, and schedules a system information block type 1 (SIB1) physical downlink shared channel (PDSCH) based on the  
35 CORESET#0; and a transmitter, which in operation, transmits the PDCCH,~~the SIB1~~

~~PDSCH, Msg2 PDSCH, as well as Msg4 PDSCH on CORESET#0 and the SIB1 PDSCH~~ to a communication apparatus.

[10] In another aspect, the techniques disclosed herein provide a communication method. The communication method comprises receiving a CORESET#0 of which time and frequency resources are defined based on a minimum bandwidth configuration associated with one or more UEs in a set of normal (non-RedCap) UEs and RedCap UE, receiving a system information block type 1 (SIB1) physical downlink shared channel (PDSCH) which is scheduled based on the CORESET#0; and determining control information and parameters from the PDCCH on CORESET#0 to read the SIB1, Msg2 PDSCH, as well as Msg4 PDSCH for initial access, handover, or beam failure recovery.

[10a] In another aspect, the techniques disclosed herein provide an integrated circuit for controlling a process of a communication apparatus. The process comprises receiving a CORESET#0 of which time and frequency resources are defined based on a minimum bandwidth configuration associated with one or more UEs in a set of normal (non-RedCap) UEs and RedCap UE, receiving a system information block type 1 (SIB1) physical downlink shared channel (PDSCH) which is scheduled based on the CORESET#0; and determining control information and parameters from the PDCCH on CORESET#0 to read the SIB1 for initial access, handover, or beam failure recovery.

[10b] In another aspect, the techniques disclosed herein provide a communication method. The communication method comprises configuring a control resource set zero (CORESET#0) of which time and frequency resources are defined based on a minimum bandwidth configuration associated with one or more UEs in a set of normal (non-RedCap) UEs and the RedCap UEs, generates a physical downlink control channel (PDCCH) on the CORESET#0, and schedules a system information block type 1 (SIB1) physical downlink shared channel (PDSCH) based on the CORESET#0; and transmitting the PDCCH on CORESET#0 and the SIB1 PDSCH to a communication apparatus.

[10c] In another aspect, the techniques disclosed herein provide an integrated circuit for controlling a process of a base station. The process comprises configuring a control resource set zero (CORESET#0) of which time and frequency resources are defined

5 based on a minimum bandwidth configuration associated with one or more UEs in a set of normal (non-RedCap) UEs and the RedCap UEs, generates a physical downlink control channel (PDCCH) on the CORESET#0, and schedules a system information block type 1 (SIB1) physical downlink shared channel (PDSCH) based on the CORESET#0; and transmitting the PDCCH on CORESET#0 and the SIB1 PDSCH to a communication apparatus.

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

[12] Additional benefits and advantages of the disclosed-embodimentsexamples in this disclosure will become apparent from the specification and drawings. The benefits and/or advantages may be individually obtained by the various embodimentsexamples 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.

#### BRIEF DESCRIPTION OF THE DRAWINGS

20 [13] Embodiments of the disclosure will be better understood and readily apparent to one of ordinary skilled in the art from the following written description, by way of example only, and in conjunction with the drawings, in which:

[14] Fig. 1 shows an exemplary architecture for a 3GPP NR system.

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[15] Fig. 2 is a schematic drawing which shows functional split between NG-RAN and 5GC.