CLAIMS

What is Claimed:

1. A wireless transmit/receive unit (WTRU) comprising:

a processor configured to:

~~measure a RX level associated with a cell; and~~

~~perform a cell selection based on: the RX level associated with the cell, a determination of whether the cell is configured to have a supplementary uplink (SUL), and a determination of whether the WTRU is configured to support the SUL, wherein the cell selection is performed based on an SUL related offset on a condition that the cell is configured to have the SUL and that the WTRU is configured to support the SUL.~~

receive first cell suitability criteria for a first cell in one or more system information blocks (SIBs), wherein the first cell suitability criteria comprises a first offset and a threshold, wherein the one or more SIBs indicate that the first cell is not configured for supplementary uplink (SUL) communication;

receive second cell suitability criteria for a second cell in the one or more SIBs, wherein the second cell suitability criteria comprises a second offset, a SUL offset, and a SUL threshold, wherein the one or more SIBs indicate that the second cell is configured for SUL communication and indicate an SUL frequency used for the SUL communication in the second cell, and wherein the SUL offset and SUL threshold are associated with SUL communication of the second cell;

select the second cell based on the second cell being configured for SUL communication, the WTRU supporting SUL communication, the SUL offset, and the SUL threshold; and

camp on the second cell.

2. The WTRU of claim 1, wherein the ~~processor is further configured to obtain a value based on the RX level associated with the cell and the SUL related offset on a condition that the cell is configured to have the SUL and that the WTRU is configured to support the SUL, and the cell selection is performed based on the obtained value~~ first offset and the threshold are associated with non-SUL communication by the first cell, and wherein the second offset and the threshold are associated with non-SUL communication by the second cell.

3. The WTRU of claim ~~2~~1, wherein the ~~processor is further configured to determine~~

~~that the obtained value is less than or equal to zero, and the cell selection is performed to select a cell that differs from the cell for which the RX level is measured~~ threshold is a non-SUL threshold, the first offset is a non-SUL offset associated with the first cell, and the second offset is a non-SUL offset associated with the second cell.

4. The WTRU of claim ~~2~~1, wherein the processor is further configured to:

~~determine that the obtained value is greater than zero; and~~

~~camp on the cell.~~ measure a reference signal received power (RSRP) associated with the second cell; and

select the second cell based on the RSRP measurement of the second cell, the SUL offset, and the SUL threshold.

5. The WTRU of claim ~~2~~4, wherein the ~~value is obtained based on a first cell suitability calculation on a condition that the cell is configured to have the SUL and that the WTRU is configured to support the SUL, and the value is obtained based on a second cell suitability calculation on a condition that the cell is not configured to support SUL or the WTRU is not configured to support the SUL.~~ processor is configured to:

compare the measured RSRP of the second cell to a combination of the SUL offset and the SUL threshold; and

select the second cell based on the measured RSRP of the second cell being greater than the combination of the SUL offset and the SUL threshold.

6. The WTRU of claim 1, wherein the processor is configured to:

determine to use the SUL offset and the SUL threshold instead of the second offset and threshold for the selection of the second cell based on the WTRU supporting SUL communication.

7. The WTRU of claim 1, wherein the WTRU is in an RRC IDLE state when camped on the second cell.

8. The WTRU of claim 1, wherein the processor is further configured to:

receive a paging message from the second cell when downlink data is available for the WTRU.

6. The WTRU of claim 2, wherein the value is obtained without using the SUL related offset on a condition that the WTRU is not configured to support the SUL or that the cell is not configured to support SUL.

7. The WTRU of claim 1, wherein the SUL related offset is received in system information.

8. The WTRU of claim 1, wherein, on a condition that the cell is configured to have the SUL and that the WTRU is configured to support the SUL, the processor is further configured to obtain an SUL related threshold and update the SUL related threshold based on the SUL related offset, wherein the cell selection is performed based on the updated SUL related threshold.

9. The WTRU of claim 1, wherein the processor is further configured to:
receive system information from the cell;
determine that the system information includes SUL configuration information; and
determine that the cell is configured to have the SUL based on the reception of the system information including the SUL configuration information.

10. The WTRU of claim 1, wherein the processor is configured to:
receive system information from the cell;
determine that the system information does not include SUL configuration information; and
determine that the cell is not configured to support SUL based on the system information not including the SUL configuration information.

11. The WTRU of claim 1, wherein the SUL is a first SUL, and the SUL related offset is a first SUL related offset, wherein the processor is further configured to receive, from the cell, a system information block (SIB) comprising information relating to another cell that differs from the cell for which the RX level is measured, wherein the cell selection is performed based on: a RX level associated with the another cell, a determination of whether the another cell is configured to have a second SUL, and a determination of whether the WTRU is configured to support the second SUL, wherein the cell selection is performed based on a second SUL related offset on a condition that the another cell is configured to have the second SUL and that the WTRU is configured to support the second SUL.

~~129~~. A method performed by a wireless transmit/receive unit (WTRU), the method comprising: ~~measuring a RX level associated with a cell; and~~

~~performing a cell selection based on: the RX level associated with the cell, a determination of whether the cell is configured to have a supplementary uplink (SUL), and a determination of whether the WTRU is configured to support the SUL, wherein the cell selection is performed based on an SUL related offset on a condition that the cell is configured to have the SUL and that the WTRU is configured to support the SUL.~~ receiving first cell suitability criteria for a first cell in one or more system information blocks (SIBs), wherein the first cell suitability criteria comprises a first offset and a threshold, wherein the one or more SIBs indicate that the first cell is not configured for supplementary uplink (SUL) communication;

receiving second cell suitability criteria for a second cell in the one or more SIBs, wherein the second cell suitability criteria comprises a second offset, a SUL offset, and a SUL threshold, wherein the one or more SIBs indicate that the second cell is configured for SUL communication and indicate an SUL frequency used for SUL communication in the second cell, and wherein the SUL offset and SUL threshold are associated with SUL communication of the second cell;

selecting the second cell based on the second cell being configured for SUL communication, the WTRU supporting SUL communication, the SUL offset, and the SUL threshold; and

camping on the second cell.

~~1310~~. The method of claim ~~129~~, ~~further comprising obtaining a value based on the RX level associated with the cell and the SUL related offset on a condition that the cell is configured to have the SUL and that the WTRU is configured to support the SUL, and the cell selection is performed based on the obtained value.~~ wherein the first offset and the threshold are associated with non-SUL communication by the first cell, and wherein the second offset and the threshold are associated with non-SUL communication by the second cell.

~~1411~~. The method of claim ~~139~~, ~~further comprising determining that the obtained value is less than or equal to zero, and the cell selection is performed to select a cell that differs from the cell for which the RX level is measured.~~ wherein the threshold is a non-SUL threshold, the first offset is a non-SUL offset associated with the first cell, and the second offset is a non-SUL offset associated with the second cell.

~~1512~~. The method of claim ~~139~~, further comprising: ~~determining that the obtained value is greater than zero; and camping on the cell.~~ measuring a reference signal received power (RSRP) associated with the second cell; and

selecting the second cell based on the RSRP measurement of the second cell, the SUL offset, and the SUL threshold.

~~16. The method of claim 13, wherein the value is obtained based on a first cell suitability calculation on a condition that the cell is configured to have the SUL and that the WTRU is configured to support the SUL, and the value is obtained based on a second cell suitability calculation on a condition that the cell is not configured to support the SUL or the WTRU is not configured to support the SUL.~~

~~17. The method of claim 13, wherein the value is obtained without using the SUL related offset on a condition that the WTRU is not configured to support the SUL or that the cell is not configured to support SUL.~~

~~18. The method of claim 12, wherein the SUL related offset is received in system information.~~

13. The method of claim 12, further comprising:

comparing the measured RSRP of the second cell to a combination of the SUL offset and the SUL threshold; and

selecting the second cell based on the measured RSRP of the second cell being greater than the combination of the SUL offset and the SUL threshold.

14. The method of claim 9, further comprising:

determining to use the SUL offset and the SUL threshold instead of the second offset and threshold for the selection of the second cell based on the WTRU supporting SUL communication.

15. The method of claim 9, wherein the WTRU is in an RRC_IDLE state when camped on the second cell.

16. The method of claim 9, further comprising:

receiving a paging message from the second cell when downlink data is available for the WTRU.

19. A wireless transmit/receive unit (WTRU) comprising:

a processor configured to:

receive a first handover (HO) command to a first cell associated with a first supplementary uplink (SUL) and a first regular uplink (RUL), wherein the first HO command comprises an explicit indication of whether the first SUL or the first RUL should be used for random-access to complete a first HO;

perform HO to the first cell in accordance with the first HO command;

receive a second HO command to a second cell associated with a second SUL and a second RUL, wherein whether to use the second SUL or the second RUL for random access to complete a second HO is determined based on a downlink reference signal received power (DL-RSRP) of the second SUL, and wherein, if the DL-RSRP is below a threshold, the processor is configured to select the second SUL as an UL carrier for HO, and if the DL-RSRP is equal to or above the threshold, then the processor is configured to select the second RUL as the UL carrier for HO; and

perform HO to the second cell in accordance with the second HO command.

20. A method performed by a wireless transmit/receive unit (WTRU), the method comprising:

receiving a first handover (HO) command;

determining that the first HO command comprises an explicit indication of an uplink (UL) carrier for HO;

selecting an UL carrier for the first HO command based on whether random-access channel (RACH) resources are provided for a supplementary uplink (SUL) or a regular uplink (RUL) in the first HO command;

performing HO to the selected UL carrier indicated by the first HO command;

receiving a second HO command;

determining that the second HO command comprises a configuration for a SUL and a RUL in the second HO command;

selecting an UL carrier for the second HO command based on whether a downlink reference signal received power (DL-RSRP) of the SUL is below a threshold, wherein, if the DL-RSRP of the SUL is below the threshold, the SUL is selected as the UL carrier for a second HO, and if the DL-RSRP of the SUL is equal to or above the threshold, the RUL is selected as the UL carrier for the second HO; and

performing HO to the selected UL carrier indicated by the second HO command.