3GPP TSG-RAN WG4 Meeting #104-e R4-221XXXX

Electronic Meeting, August 15- 26, 2022

**Title:** draft LS on intraBandENDC-Support

**Response to:**

**Release:** Rel-15

**Work Item:** NR\_newRAT-Core

**Source:** RAN4

**To:** RAN2

**Cc:**

**Contact Person:**

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**Attachments**: N/A

**1. Overall Description:**

In Rel-15 and Rel-16, RAN4 introduced intra-band contiguous and non-contiguous ENDC configurations with more than 2 carriers, as illustrated in Table 1.

**Table 1: Intra-band contiguous EN-DC configurations**

|  |  |
| --- | --- |
| **EN-DC**  **configuration** | **Uplink EN-DC**  **configuration** |
| DC\_(n)41AB  DC\_(n)41CA  DC\_(n)41DA | DC\_41A\_n41A |
| DC\_(n)48CA | DC\_(n)48AA  DC\_48A\_n48A |
| DC\_(n)48DA | DC\_(n)48AA  DC\_48A\_n48A |

For the configuration of intra-band ENDC combination with more than 2 carriers, it is possible that

* All CCs are contiguous in DL but neither carrier is contiguous to each other in UL, e.g., DL DC\_(n)41AB with UL DC\_41A\_n41A
* LTE and NR adjacent carriers are contiguous but carriers in LTE or NR are non-contiguous, e.g., DL DC\_48A\_(n)48AA with UL DC\_(n)48AA, DL DC\_48A\_(n)48AA with UL DC\_48A\_n48A

The IE *intraBandENDC-Support* in UE capability can indicate three states {contiguous, non-contiguous, both} per band combination. Whether the Band combination is contiguous or non-contiguous is unclear if UL and DL configurations are different or if LTE and NR carriers are in mixed contiguous and non-contiguous configuration. Thus there could be confusion when the UE indicates either of the 2 cases above with the capability of *intraBandENDC-Support*.

For example, if the UE reports ‘contiguous’ of Band combination DC\_(n)41AB, it may not support DC\_41A\_n41A(non-contiguous) in uplink. But considering the table above defined in TS 38.101-3, the BS would get confused that whether the UE supports DC\_41A\_n41A(non-contiguous) in uplink or not.

For the problems of ambiguity on some intra-band ENDC band combinations with more than 2 carriers, new signalling could be a possible solution. Though the ambiguity issue for intra-band EN-DC combinations still exists from Rel-16, considering the backward compatibility issue, RAN4 agrees that new signalling if needed could be introduced from Rel-18.

RAN4 also discussed the possible solutions to address the issue, but no consensus yet [1][2][3]. Contributions listed below are just for RAN2's reference.

Chair=> discussion whether the combinations can be supported in RAN4 and focus on RAN4 aspects.

**2. Actions:**

**To RAN2:**

**ACTION:** RAN4 respectfully asks RAN2 to consider a solution to solve the problems of ambiguity on some intra-band ENDC band combinations with more than 2 carriers.

**3. Date of Next TSG WG RAN4 Meetings:**

TSG-RAN4 Meeting#104bis-e Oct 2022 E-meeting

TSG-RAN4 Meeting#105 Nov 2022 TBD

# References

[1] R4-2212852, “Draft CR for 38.101-3 Rel-16 intra-band contiguous EN-DC band combination”, Google Inc., Comcast, CableLabs, Federated Wireless, RAN4#104e, August 15-26, 2022

[2] R4-2212854, “Draft CR for 38.101-3 Rel-17 intra-band contiguous EN-DC band combination”, Google Inc., Comcast, CableLabs, Federated Wireless, RAN4#104e, August 15-26, 2022

[3] R4-2212582, “Draft CR for 38.101-3 Rel-16 to correct band combination for intra-band ENDC”, Xiaomi, RAN4#104e, August 15-26, 2022