

[97e-18-R18-Simplified-BandCombo] - Version 0.0.3
RAN

3GPP TSG-RAN Plenary Meeting # 97-e RP-222578

Electronic Meeting, 12th – 16rd September, 2022

Agenda item: 9.2.14

Source: Moderator (ZTE)

Title: Email discussion summary for [97e-18-R18-Simplified-BandCombo]

Document for: Information

1 Introduction

List of contributions treated in this thread:

Table 1: Contribution list

TDoc	Title	Source	M
RP-222215	On simplification of V2X band combinations in FS_SimBC	ZTE, vivo	Di
RP-222216	Revised SID: Study on simplification of band combination specification for NR and LTE	ZTE, vivo	Re

2 Topic #1: Justification and motivations

Justification for a simplified approach aiming to allow operation of any PC5 configuration (LTE PC5, NR PC5, CA on PC5) with any Uu configuration (any LTE CA/DC, EN-DC, NR DC) was agreed in RAN#96 (RP-221790):

Finally, RAN4 defines band combinations of Uu and PC5 under the WI “NR_LTE_V2X_PC5_combos” [RP-213297], wh
--

Under the above justification, these Uu configurations are included:

- LTE Uu (for the sake of simplicity, referring to single CC case)
- NR Uu (for the sake of simplicity, referring to single CC case)

- LTE CA/DC
- EN-DC
- NR CA/DC

And these PC5 configurations are included:

- LTE PC5
- NR PC5
- CA on PC5

Literally, all of the combination between the above Uu and PC5 configurations are covered, i.e., at least 13 combinations (excluding LTE Uu – single CC + LTE PC5, LTE CA/DC + LTE PC5) shown below:

- Combination #1: LTE Uu + NR PC5
- Combination #2: LTE Uu + CA PC5
- Combination #3: NR Uu + LTE PC5
- Combination #4: NR Uu + NR PC5
- Combination #5: NR Uu + CA on PC5
- Combination #6: LTE CA/DC + NR PC5
- Combination #7: LTE CA/DC + CA on PC5
- Combination #8: EN-DC + LTE PC5
- Combination #9: EN-DC + NR PC5
- Combination #10: EN-DC + CA on PC5
- Combination #11: NR-DC + LTE PC5
- Combination #12: NR-DC + NR PC5
- Combination #13: NR-DC + CA on PC5

However, RAN4 never studied CA/DC+PC5 band combination in Rel-16 NR V2X or Rel-17 SL enhancement. Furthermore, this kind of CA/DC + PC5 band combinations are not even in the scope of Rel-18 SL evolution, therefore, Combination #6, #7, #8, #9, #10, #11, #12 and #13 can be removed from the scope.

Furthermore, for PC5 on CA, as Rel-18 SL evolution, the WID in RP-220300 states that the relative objective should be checked in RAN#97-e taking into account the progress on other objectives.

Table 3: Rel-18 SL evolution on PC5 on CA

Specify mechanism to support NR sidelink CA operation based on LTE sidelink CA operation [RAN2, RAN1, RAN4] (T
--

It can be seen that for SL CA part, the work in Rel-18 SL evolution WI is still put on hold. And if the objective of SL CA is confirmed in Rel-18, the work in RAN4 would not be started earlier than 2023. Therefore, Combination #2 and #5 can be removed as well.

With such consideration, it is recommended to further clarify the scope of PC5 and Uu band combinations in the SID FS_SimBC by explicitly listing the feasible combinations #1, #3 and #4.

2.1 Initial round

2.1.1 Companies views' collection for initial round

Issue 1-1: Do you agree to restrict the combination of Uu and PC5 to limited cases shown above (Combination #1, #3 and #4)?

Feedback Form 1: Comment collection on restricting the combinations for Uu and PC5

<p>1 – Nokia Japan</p> <p>As far as the content follows the endorsed R4-2214446 in RAN4#104-e, we are fine.</p>
<p>2 – LG Electronics Deutschland</p> <p>We agree to restrict the combinations of Uu and PC5 to #1, #3 and #4 .</p>
<p>3 – Ericsson LM</p> <p>We are fine to restrict the combinations of Uu and PC5 to #1, #3 and #4.</p>
<p>4 – vivo Communication Technology</p> <p>Yes, we agree to restrict Uu+PC5 band combinations to #1,#3,#4.</p>
<p>5 – CATT</p> <p>We are fine to preclude the combinations including CA on PC5. But for LTE/NR CA/DC+PC5, we understand it is possible for R18 based on the following statement in R4-222385.</p> <p>“• Whether to specify co-current operation of LTE/NR CA/DC band combinations + PC5 V2X band depending on requests in Rel-18.”</p> <p>So we would like to clarify that the request for LTE/NR CA/DC+PC5 is still allowed in R18. And we would like to see if it is possible to keep LTE/NR CA/DC+PC5 in this WID. Because if these combinations are removed from this WID, when the corresponding request happens, we will need to restart the study on the simplification.</p>

<p>6 – Huawei Technologies France</p> <p>OK with the restriction, which is aligned with what has been discussed in RAN4 in Rel-16/17.</p>
<p>7 – Beijing Xiaomi Mobile Software</p> <p>Ok with the restriction</p>
<p>8 – Qualcomm Incorporated</p> <p>We are OK with the restriction. As comments by CATT, if RAN4 defines the requirements for LTE/NR CA/DC+PC5 in Rel-18, will this part be added back in this SI?</p>

Issue 1-2 If the answer to Issue 1-1 is yes, do you have any comments on the proposed change for justification/motivation texts?

Finally, RAN4 defines band combinations of Uu and PC5 under the WI “NR_LTE_V2X_PC5_combos” [RP-213297], which required formal specification work as commercially relevant combinations need to be defined. Currently only single CC on Uu and PC5 is considered, and example combinations are defined, ~~while not a single CA or DC Uu configuration in conjunction with concurrent use of PC5 bands is defined. PC5 on CA is in the objective in Rel-18 SL evolution, which needs further confirmation in RAN#97-e. Also, LTE CA/DC, EN-DC, NR DC+PC5 band combinations are never studied in Rel-16/17/18 SL related WI. Therefore, the scope on Uu and PC5 combos should be restricted. A simplified approach aiming to allow operation of any PC5 configuration (LTE PC5, NR PC5, CA on PC5) with any Uu configuration (any LTE CA/DC, EN-DC, NR DC) the following PC5 configurations with Uu configurations~~ should be investigated:-

- Inter-band con-current V2X operating bands (TS 38.101-1&3)
 - NR Uu+NR PC5 (TS 38.101-1)
 - LTE Uu+NR PC5(TS 38.101-3)
 - NR Uu+LTE PC5(TS 38.101-3)
- Intra-band con-current V2X operating bands (TS 38.101-1)

Figure 1: Proposed change for justification / motivation texts

Feedback Form 2: Comment collection on the proposed change for justification / motivation texts

<p>1 – Nokia Japan</p> <p>As far as the content follows the endorsed R4-2214446 in RAN4#104-e, we are fine.</p>
<p>2 – LG Electronics Deutschland</p> <p>Agree to change the WID, which can give more clarity to RAN4 work.</p>
<p>3 – Ericsson LM</p> <p>We are fine to updated the WID as suggested above (issue 1-2).</p>

<p>4 – vivo Communication Technology</p> <p>We support the above changes.</p>
<p>5 – Huawei Technologies France</p> <p>We are OK with the proposed changes.</p>
<p>6 – Beijing Xiaomi Mobile Software</p> <p>support the proposed changes</p>
<p>7 – Qualcomm Incorporated</p> <p>We are OK with the proposed changes at this stage. As comments by CATT, if RAN4 defines the requirements for LTE/NR CA/DC+PC5 in Rel-18, will this part be added back in this SI?</p>

2.1.2 Summary for initial round

Based on the comments on Issue 1-1, most of companies agree to restrict to Combination #1, #3 and #4 except that one company suggests to keep LTE/NR CA/DC + PC5 due to potential requests of such band combinations in the basket WI RP-222385 in the Rel-18 time-frame. In Moderator’s view, such band combination request does not happen yet, and the work in RAN4 will most likely not be started earlier than 2023, which is similar to the case for CA on PC5. Therefore, Moderator suggests to keep the SI focused on Combination #1, #3 and #4 at this stage, and if there is any new request for LTE/NR CA/DC + PC5 band combination, or progress on CA on PC5, and if time permitted for the SI, the scope of the SI could be revisited accordingly.

Based on comments on Issue 1-2, the justification revised texts are unanimously agreed.

No more discussion on the justification revision is expected in this week.

2.2 Intermediate round (if applicable)

2.2.1 Companies views’ collection for intermediate round

2.2.2 Summary for intermediate round

2.3 Final round (if applicable)

2.3.1 Companies views' collection for final round

2.3.2 Summary for final round

3 Topic #2: Objectives

Main technical topic overview. The structure can be done based on sub-agenda basis.

3.1 Initial round

As described in the previous section, if removing CA/DC from Uu configurations and CA from PC5 configurations, the valid combinations are Combination #1, #3, and #4. Note that the below proposed revision on the objective is further grouped into inter-band and intra-band cases.

-1

Issue 2-1: Do you have any comment on the proposed objective?

Feedback Form 3: Comment collection on the revised objective

1 – Nokia Japan
As far as the content follows the endorsed R4-2214446 in RAN4#104-e, we are fine.
2 – LG Electronics Deutschland
We are fine with the proposed objective revision that can give more clarity to RAN4 work
3 – vivo Communication Technology
We support the revised objectives.
4 – Beijing Xiaomi Mobile Software
Ok with the changes.

3.1.1 Companies views' collection for initial round

3.1.2 Summary for initial round

Based on the comments on Issue 2-1, the proposed objective changes are unanimously agreed.

No more discussion on the objective revision is expected in this week.

As a summary, Moderator recommends to approve the revised SID RP-222216 in this plenary and close this thread.

3.2 Intermediate round (if applicable)

3.2.1 Companies views' collection for intermediate round

3.2.2 Summary for intermediate round

3.3 Final round (if applicable)

3.3.1 Companies views' collection for final round

3.3.2 Summary for final round

