**3GPP T****SG-RAN WG2 #114 electronic R2-21xxxxx**

**Online, 19th – 27th May, 2021**

**Agenda item: 5.3 User Plane corrections**

**Source: NEC (Rapporteur)**

**Title: Report of [AT114-e][002][NR15] User Plane**

**Document for: Discussion and decision**

1. Introduction

This document is to report the result of the following email discussion in RAN2#114-e Meeting:

* [AT114-e][002][NR15] User Plane (NEC)

 Scope: Treat R2-2105747, R2-2105748, R2-2106455, R2-2106456, R2-2105849, R2-2105850, R2-2106286, R2-2105746, R2-2105555, R2-2105556, R2-2105315, R2-2105316, R2-2106302, R2-2106319, R2-2105469, R2-2105470, R2-2105743, R2-2105761,

 Phase 1, determine agreeable parts, Phase 2, for agreeable parts Work on CRs.

 Intended outcome: Report and Agreed CRs.

 Deadline: Schedule A

2. Contact Information

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| Company | Contact: Name (E-mail) |
| NEC (Rapporteur) | Wangda (wangda@labs.nec.cn) |
| Qualcomm | Linhai He (linhaihe@qti.qualcomm.com) |
| MediaTek | Guanyu Lin (guanyu.lin@mediatek.com) |
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3. Phase 1 discussion

## 3.1 MAC behavior for suspended radio bearers

[1] [R2-2105747](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105747.zip) Correction on MAC behavior for suspended radio bearers for Rel-15 Huawei, HiSilicon CR Rel-15 38.321 15.12.0 1107 - F NR\_newRAT-Core

[2] [R2-2105748](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105748.zip) Correction on MAC behavior for suspended radio bearers for Rel-16 Huawei, HiSilicon CR Rel-16 38.321 16.4.0 1108 - F NR\_newRAT-Core

**Reason of change:** In LTE MAC spec, it says “The MAC entity shall not transmit data for a logical channel corresponding to a radio bearer that is suspended (the conditions for when a radio bearer is considered suspended are defined in TS 36.331 [8]).”. However, there is no such description in NR MAC spec, which makes the UE behavior for suspended radio bearers not clear.

Q1: Do you agree to add in NR MAC spec that MAC shall not transmit data for a logical channel corresponding to a radio bearer that is suspended?

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| --- | --- | --- |
| Company | Yes/No | comments |
| Qualcomm | Yes | We are fine with the CRs. |
| MediaTek | Yes | We are fine to clarify UE behaviour as in LTE MAC spec. |
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[3] [R2-2106455](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2106455.zip) Correction on BSR calculation for suspended radio bearers MediaTek CR Rel-15 38.321 15.12.0 1119 - F NR\_newRAT-Core

[4] [R2-2106456](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2106456.zip) Correction on BSR calculation for suspended radio bearers MediaTek CR Rel-16 38.321 16.4.0 1120 - A NR\_newRAT-Core

**Reason of change:** In LTE MAC spec, it is specified that “For the Buffer Status reporting procedure, the UE shall consider all radio bearers which are not suspended and may consider radio bearers which are suspended. “ However, there is no such description in NR MAC spec, which makes the UE behavior for suspended radio bearers not clear.

Rapporteur think it is common understanding that the UE shall consider all radio bearers which are not suspended for BSR, so the question is if the NR MAC entity may consider radio bearers which are suspended.

Q2: Do you agree that NR MAC may consider radio bearers which are suspended for BSR?

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| Company | Yes/No | comments |
| Qualcomm | Yes | We are fine with the CRs. |
| MediaTek | Yes | We are fine to clarify UE behaviour as in LTE MAC spec. |
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## 3.2 Term of handover in handling of MAC CE

[5] [R2-2105849](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105849.zip) Correction to 38.321 on the term of the handover in handling of MAC CE ZTE, Sanechips CR Rel-15 38.321 15.12.0 1110 - F NR\_newRAT-Core

[6] [R2-2105850](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105850.zip) Correction to 38.321 on the term of the handover in handling of MAC CE ZTE, Sanechips CR Rel-16 38.321 16.4.0 1111 - F NR\_newRAT-Core

**Reason of changes:** Regrading the handover is only referring to the PCell change, UE behavior for handling the MAC CE will be restricted to only PCell change case, it will result in some unexpected UE behavior as shown below:

* 1: TCI states or some kind resources sets or semi-presistent CSI reporting configuration on SCG will not be deactivated when UE performing the PSCell change/addition.
* 2: TCI states or some kind resources sets or semi-presistent CSI reporting configuration on SCG should be deactivated when UE performing the PCell change.

Q3: Do you agree to change the term “handover” into ‘reconfiguration with sync’ in subclause Handling of MAC CEs as proposed in [5][6]?

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| Company | Yes/No | comments |
| Qualcomm | Yes | We agree with the reasons for change. In addition, we'd like to suggest companies to discuss whether to change "handover" in the RACH section to "RRC reconfig with sync" as well. We understand that this issue was discussed in the past. But we think it is worth revisiting, because otherwise there can be issues during PSCell change/addition.  |
| MediaTek | Open to discuss | Since we have new scenarios to consider (PSCell change/addition), we are fine to revisit the issue.  |
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## 3.3 PDCCH monitoring for deactivated SCell

[7] [R2-2106286](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2106286.zip) Clarification on not monitoring PDCCH for SCell when the SCell is deactivated ZTE Corporation, Sanechips discussion Rel-15 NR\_newRAT-Core

In [7], clarification about PDCCH monitoring for deactivate SCell has been discussed, and point out there are two different understanding as below:

* Understanding 1: the UE expects that all detected PDCCHs sent by other active cells do not contain information for the deactivated cell.
* Understanding 2: the UE ignores information for the deactivated SCell if the detected PDCCHs sent by other active cells contain information for it, such as ap-CSI-RS or SFI.

[7] thinks understanding 2 is a correct understanding, and based on understanding 2, RAN2 needs to confirm the following proposals:

**Proposal 1：RAN2 confirm the PDCCH will be monitored if the monitor of such PDCCH is required by any serving cell.**

**Proposal 2: From RAN2 perspective, the information carried in DCI for an deactivated serving cell should be ignored by UE.**

Q4: Do you agree with the understanding 2 and the two proposals above?

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| Company | Yes/No | comments |
| Qualcomm | See comment | We are not sure what exactly Proposal 1 specifies, as it is not worded clearly to us. We are fine with Proposal 2. We don’t think any change to the current RAN2 specs are needed.Our understanding of UE behavior for an deactivated SCell is that since scheduled and scheduling cells share the same search space, UE still monitors the search space on the scheduling cell but it does not expect any PDCCH message for the deactivated SCell (the scheduled one). Otherwise, that should be a network error and UE should ignore it.  |
| MediaTek | See comment | We share same view with Qualcomm. We think understanding 2 and P2 are correct. Besides, we do not see RAN2 spec change needed. |
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## 3.4 Suspended AM DRB in PDCP re-establishment

[8] [R2-2105746](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105746.zip) Clarification on PDCP suspend and suspended DRB Huawei, HiSilicon discussion Rel-15 NR\_newRAT-Core

[9] [R2-2105315](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105315.zip) Correction on suspended AM DRB in PDCP re-establishment NEC, LG Electronics CR Rel-15 38.323 15.7.0 0073 - F NR\_newRAT-Core

[10] [R2-2105316](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105316.zip) Correction on suspended AM DRB in PDCP re-establishment NEC, LG Electronics CR Rel-16 38.323 16.3.0 0074 - A NR\_newRAT-Core

[11] [R2-2105555](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105555.zip) RRC connection re-establishment Nokia, Ericsson, Nokia Shanghai Bell, Sequans Communications CR Rel-15 38.323 15.7.0 0075 - F NR\_newRAT-Core

[12] [R2-2105556](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105556.zip) RRC connection re-establishment Nokia, Ericsson, Nokia Shanghai Bell, Sequans Communications CR Rel-16 38.323 16.3.0 0076 - A NR\_newRAT-Core

[13] [R2-2106302](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2106302.zip) Clarification on suspended AM DRB Samsung Electronics Polska CR Rel-15 38.323 15.7.0 0077 - F NR\_newRAT-Core

[14] [R2-2106319](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2106319.zip) Clarification on suspended AM DRB Samsung Electronics Polska CR Rel-16 38.323 16.3.0 0079 - A NR\_newRAT-Core

At RAN2 #113bis, there was some discussion on the use of “suspended DRB” in PDCP re-establishment to refer to “PDCP suspend”, which may mislead the readers wrongly go to the procedure for RRC Resume in case of first reconfiguration after RRC re-establishment. No conclusion was made and the CRs R2-2103302/R2-2103303 are postponed.

In this meeting, companies’ view can be divided into two groups:

* 1. Correction on the “suspended AM DRB” in PDCP spec is needed to avoid the confusion [9][10][11][12][13][14].
* 2. Capture in the chairman notes that “for suspended AM DRBs” in PDCP spec is referring to the case when PDCP suspend was performed before” [8].

Q5. Do you agree that correction is needed for “suspended AM DRBs” in NR PDCP spec?

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| Company | Yes/No | comments |
| Qualcomm | Yes |  |
| MediaTek | Yes |  |
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If correction in PDCP spec is needed, the following three options are proposed based on companies’ input:

* Option 1: Avoid using “suspended AM DRBs”, and instead use below to describe the case of “PDCP suspend”[9][10]
* for AM DRBs whose PDCP entities were suspended,
* for AM DRBs whose PDCP entities were not suspended,
* Option 2: Avoid using “suspended AM DRBs”, and instead use below to describe the case of “PDCP suspend” [11][12]
* for AM DRBs belonging to a PDCP entity which is suspended (see clause 5.1.4)…
* for AM DRBs belonging to a PDCP entity which is not suspended (see clause 5.1.4)…
* Option 3: To add a reference without modifying existing text [13][14]:
* for suspended AM DRBs according to clause 5.1.4…
* for AM DRBs which were not suspended according to clause 5.1.4….

Option 1 and option 2 are actually very similar. The main difference is either “were/was” or “are/is” is used. The rapporteur understand Option 1 considers PDCP suspend as a procedure which was performed before PDCP re-establishment, while Option 2 considers PDCP suspended/not suspended can be seen as a PDCP status when PDCP re-establishment is performed.

For Option 3, the rapporteur think if we are OK to correct the spec, it is better to avoid keeping the confusing wording “suspended DRB”.

Q6. If the answer to Q5 is “**Yes”**, which option do you support?

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| --- | --- | --- |
| Company | Option 1/2/3? | comments |
| Qualcomm | Option 1 |  |
| MediaTek | Option 1 |  |
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## 3.5 PDU session ID change

[15] [R2-2105469](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105469.zip) Clarification on the change of PDU session ID Samsung CR Rel-15 38.331 15.13.0 2628 - F NR\_newRAT-Core R2-2103279

[16] [R2-2105470](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105470.zip) Clarification on the change of PDU session ID Samsung CR Rel-16 38.331 16.4.1 2629 - A NR\_newRAT-Core

[17] [R2-2105743](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105743.zip) On change of PDU session ID for an established DRB Huawei, HiSilicon discussion Rel-15 NR\_newRAT-Core

[18] [R2-2105761](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_114-e/Docs/R2-2105761.zip) Change of PDU Session ID Ericsson discussion Rel-15 NR\_newRAT-Core

This is one postponed issue at RAN2 #113bis-e.

At this meeting, all contributions [15] [16] [17] [18] think the PDU session ID cannot be changed after a DRB is established. [15] [16] think clarification in 38.331 is needed, while [17] [18] think there is no need to capture this in specification.

Q7. Do you agree that PDU session ID is not changed after a DRB is established?

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| Company | Yes/No | comments |
| Qualcomm | Yes |  |
| MediaTek | Yes |  |
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Q8. If the answer to Q7 is “**Yes”**, do you think there is a need to capture it in the NR RRC spec?

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| Company | Yes/No | comments |
| Qualcomm | neutral |  |
| MediaTek | Yes | We are fine to specify the restriction in the field description of pdu-Session to close the issue. |
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4. Phase 2 discussion

TBD (based on phase 1 outcome)

1. Conclusion

TBD