3GPP TSG-RAN WG2 Meeting #118 electronic R2-220xxxx

Online, May 9-20, 2022

Agenda Item: 6.9.3.1

Source: MediaTek Inc.

**Title: [DRAFT] Report of [Post118-e][072][ePowSav] PEI and Subgrouping (MediaTek)**

Document for: Discussion and decision

# Introduction

The document summarizes the following offline discussion:

* [Post118-e][072][ePowSav] PEI and Subgrouping (Mediatek)

 Scope: Address Last Cell issues determine TS changes, determine TS changes needed to support PEI + RedCap.

 Intended outcome: Report with TP.

 Deadline: Extra Short.

Contact information

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# Discussion

## PEI monitoring in last used cell

In RAN3 reply-LS [1], it is confirmed that the mismatched understanding about the ‘last used cell’ between UE and NW also exists in NR.

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| **Question 1: Whether the mismatched understanding about the ‘last used cell’ between UE and NW still exists in NR, if so, whether the LTE method (i.e. to introduce ‘no last cell update’ indication in *RRCRelease* Message) can be reused?****RAN3's answer:** RAN3 thinks that the mismatched understanding about the ‘last used cell’ between UE and NW also exists in NR. From RAN3 perspective, the mentioned LTE method can be reused for NR, however, the final decision is up to RAN2. |

Rapporteur suggests that we take an approach similar to that in LTE, i.e., introduce *noLastCellUpdate* in RRCRelease for NR. Then if *lastUsedCellOnly* is configured in SIB1, UE monitors PEI in the cell only if it receives latest *RRCRelease* message without *noLastCellUpdate* from this cell. We have the following draft proposal.

**Proposal 1: Introduce *noLastCellUpdate* indication in *RRCRelease* to handle mismatched understanding about ‘last used cell’ between UE and NW in NR. (TS 38.331 changes needed)**

**Proposal 2: If *lastUsedCellOnly* is configured in system information of a cell, the UE monitors PEI in the cell only if the latest received *RRCRelease* without *noLastCellUpdate* is from that cell. (TS 38.304 changes needed)**

**Q1: Do you support Proposal 1?**

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| Company | Yes/No | Comments, TS changes |
| MediaTek | Yes |  |
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**Q2: Do you support Proposal 2?**

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| Company | Yes/No | Comments, TS changes |
| MediaTek | Yes |  |
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## UE Subgrouping capability in RNA

Regarding the potential problematic scenario that anchor gNB does not support CN-assigned subgrouping while other gNBs in the same RNA does, RAN3 LS confirmed that this can be avoided by implementation, e.g., CN-assigned subgrouping support is uniform in a certain area.

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| **Question 2: Whether this problematic scenario can be avoided or needs to be resolved through signaling? (In this scenario, assuming that the anchor gNB does not support CN assigned subgrouping).****RAN3's answer:** From RAN3 perspective, the problematic scenario can be avoided by implementation, e.g., CN-assigned subgrouping support is uniform in a certain area e.g., RNA or TAs. RAN3 has no solution other than to assume deployment coordination. |

Rapporteur thinks that then RAN2 can assume proper network implementation for subgrouping support in an RNA. We have the following draft Proposal.

**Proposal 3: RAN2 assumes that deployment coordination for paging subgrouping capability of gNBs within an RNA can be handled by implementation, e.g., CN-assigned subgrouping support is uniform in a certain area (TA/RNA). (No specification impact)**

**Q3: Do you support Proposal 3?**

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| Company | Yes/No | Comments, TS changes |
| MediaTek | Yes |  |
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## Paging & PEI monitoring for RedCap

In Release 17, redcap specific initial DL BWP can be configured. RedCap WI made the following agreements regarding *pagingSearchSpace* and the associated physical time/frequency domain resources.

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| 2. RedCap UE in idle/inactive mode monitors paging in the RedCap-specific initial DL BWP if RedCap-specific initial DL BWP contains CD-SSB and the RedCap-specific initial DL BWP is configured with search space for paging (i.e. pagingSearchSpace).3. If paging and OSI search space are configured in the RedCap-specific initial DL BWP which contains CD-SSB, it is up to NW configuration whether the associated physical time/frequency domain resources can be the same as or different from the ones in the legacy initial DL BWP (FFS whether we need to update the field description) |

Although RedCap WI conclusion does not mention PEI, rapporteur’s understanding is that PEI monitoring should follow paging monitoring. Therefore, *pei-SearchSpace-r17* and *firstPDCCH-MonitoringOccasionOfPEI-O-r17* needs to be configured separately for *initialDownlinkBWP-RedCap-r17* and *initialDownlinkBWP*. This implies some ASN.1 re-structing, i.e., moving pei-SearchSpace-r17, *firstPDCCH-MonitoringOccasionOfPEI-O-r17* to *PDCCH-ConfigCommon* of *initialDownlinkBWP-RedCap-r17* and *initialDownlinkBWP*. Moreover, the field descriptions may need to be updated to describe RedCap-related UE behaviour. However, rapporteur suggests that this be discussion in RedCap session. We have the following proposals:

**Proposal 4: Move *pei-SearchSpace-r17*, *firstPDCCH-MonitoringOccasionOfPEI-O-r17* to *PDCCH-ConfigCommon* of *initialDownlinkBWP-RedCap-r17* and *initialDownlinkBWP*. (TS 38.331 changes needed)**

**Proposal 5: Field description updates about PEI monitoring for RedCap UEs can be discussed in RedCap session.**

**Q4: Do you support Proposal 4?**

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| Company | Yes/No | Comments |
| MediaTek | Yes |  |
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**Q5: Do you support Proposal 5?**

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| Company | Yes/No | Comments |
| MediaTek | Yes |  |
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## Other issues

**Q6: Do you see any other issues for PEI and subgrouping to be discussed?**

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# Conclusion

It is proposed to discuss and decide on the following proposals:

# Text Proposals

(To be provided by TS rapporteurs)

For last used cell

For RedCap

# Reference

1. R3-224004, Reply LS on PEI and UE Subgrouping, RAN3
2. RAN2#118-e Report from Break-out session on R17 NTN, REDCAP and CE, Vice Chair