3GPP TSG-RAN WG2 Meeting #116bis electronic R2-220xxxx

Online, January 17 – 25, 2022

Agenda Item: 8.9.2.1

Source: MediaTek Inc.

**Title: Summary of [Post116bis-e][080][ePowSav] Open Issues (Mediatek)**

Document for: Discussion and decision

# Introduction

This document is to summarize the following offline discussion:

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| --- |
| * [Post116bis-e][080][ePowSav] Open Issues (Mediatek)   Scope: Determine if Company input by Pre117-e discussions shall be used, and how many / which Pre-discussions shall be done. Capture Open Issues not captured in the CR email discussions and suggest how to treat. [After finalization, Merge open issues from other discussions into a WI OI list (OI for which company input is invited in some way shall be listed in the WI-list).  Intended outcome: Open Issues list, and organization of Pre117-e Company input discussions for the WI.  Deadline: Short (Jan 28 0800 UTC) |

NOTE: Each open issue should be associated with suggested treatment/handling.

1.       Company input into Pre117-e-offline (i.e. no company tdocs)

2.       Company tdocs invited.

3.       CR rapporteur handled issue (CR rapporteur will propose resolution as input to next meeting).

4.       Other, e.g. immature area, reference to dependency, unclear status etc.

NOTE: Some open issues may overlap with the discussions for running CRs. The WI rapporteur will merge the open issues into one list in the end.

**Contact information**

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| --- | --- |
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# Discussion

1. **PEI and Subgrouping**

OI 1.1 [Pre117-e-offline] How to indicate whether UE monitor PEI in last used cell or any other cells?

OI 1.2 [Pre117-e-offline]: Identify valid cases where UE is unable to monitor subgroup PEI configured by network. Then decide if there can be any rule for subgroup PEI monitoring, or UE simply monitor paging as per legacy.

OI 1.3 [CR rapporteur] How to capture the agreement about subgroup ID for UEID-based subgrouping in RAN2 TS

* UE belongs to k-th paging subgroup, where k = [floor (UE Identity/(N\*Ns)) mod Nsg-UEID] + Nsg-CN,

**Q1: Do you agree with the open issue list and suggested handling for PEI/subgrouping?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Company | 1.1 | 1.2 | 1.3 | Comments |
| Nokia | **Yes** | **Yes** | **Yes** | **If any impact for eDRX was left FFS, could be addd** |
| OPPO | **Yes** | **Yes** | **Yes** |  |
| CATT | **Yes** | **Yes** | **Yes** | Although 1.3 seems correctly addressed in current running 38.304 CR.  Moreover, we would like to add another OI:  At the moment, we have two configurations with same PHY behaviour in decoding DCI format 2\_7 (aka PEI):  1) subgroupConfig is not configured  2) subgroupConfig is configured with subgroupNumPerPO = 1  In both cases, RAN1 considers K=1 in their formula which results in UE only using PEI for monitoring its PO.  It is still unclear to us:  - what is Companies intention in differentiating UE behaviour for 1) and 2)  - which WG should discuss this, RAN1 or RAN2, since if different behaviours are expected, it will impact RAN1 formula? |
| Huawei, HiSilicon | **Yes** | **Yes** | **Yes** | * Regarding OI1.3 we think that it is correctly addressed in current running 38.304 CR. * Please add new OI1.X Company tdocs invited related to the gNB not being able to support CN controlled subgrouping within the RNA   For the case where the PEI mechanism is not restricted to a single cell, we think that there might be scenarios that certain gNB within a RNA does not support CN controlled subgrouping.  How to handle such scenarios and how to avoid paging detection problems needs further discussion and might have cross group (RAN2 and RAN3) impacts as this relates to whether or not the last serving gNB is able to transfer CN subgrouping related information for RAN paging  Since this discussion will involve both RAN 2 and RAN 3 hence we think it should be handled through Company tdocs invited |
| Xiaomi | **No** | **?** | **Yes** | For 1.1:  We think the first question we need to discuss is who will be the node for configure this? CN or the gNB?  Some people mentioned the gNB. But if UE gets the configuration from gNB, then when the UE reselect to another cell, it need to get the updated indication from the new cell?  If the CN can be the node since it knows UE’s paging probability and stationary state, then CN can indicate to UE belonging to this group not to use the PEI during moving across the cells of a TA. And this may impact the CT1 and RAN3. So we think it should be handled through Company tdocs invited since it has been a bit difficult to conclude.  For 1.2: Do you mean the invalid PEI monitoring occasions? Is this should be discussed in RAN1? |

1. **TRS/CSI-RS for Idle/inactive UE**

OI 2.1 [Pre117-e-offline] Whether / how to address the delay required for updating a TRS/CSI-RS configuration due to the eDRX acquisition period (1024 H-SFN)

OI 2.2 [Pre117-e-offline] A UE which acquired SIB-X with a TRS/CSI-RS configuration but didn’t yet receive an associated L1-based availability indication considers the configured TRS/CSI-RS as [FFS: “unavailable” or “available”]

**Q2: Do you agree with the open issue list and suggested handling for TRS/CSI-RS for Idle/inactive UE?**

|  |  |  |  |
| --- | --- | --- | --- |
| Company | 2.1 | 2.2 | Comments |
| Nokia | **Yes** | **Yes** |  |
| OPPO | **Yes** | **Yes** |  |
| CATT | **Yes** | **Yes** |  |
| Huawei, HiSilicon | **Yes** | **Yes** |  |
| Xiaomi | **Yes** | **Yes** |  |

1. **RLM/BFD Relaxation**

OI 3.1 [CR rapporteur] How to capture criteria for RLM/BFD relaxation, and the corresponding evaluation procedures, in RAN2 TS

* This is related to RAN2/RAN4 spec split. RAN2 assumes criteria for RLM/BFD relaxation

OI 3.2 [Pre117-e-offline] Can UE start/stop RLM/BFD relaxation by itself if it meets/fails the relaxation criteria?

OI 3.3 [Pre117-e-offline] Should UE report fulfilment or not (entry/exit) to network for RLM/BFD relaxation?

**Q3: Do you agree with the open issue list and suggested handling for RLM/BFD Relaxation?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Company | 3.1 | 3.2 | 3.3 | Comments |
| Nokia | **Yes** | **Yes** | **Yes** | Propose to add: OI 3.4 [Pre117-e-offline] Should NW be able to enable/disable RLM/BFD relaxation with explicit indication irrespective if the RLM/BFD relaxation criteria is configured or not? |
| OPPO | **Yes** | **Yes** | **Yes** |  |
| CATT | **Yes** | **Yes** | **Yes** |  |
| Huawei, HiSilicon | **Yes** | **Yes** | **Yes** |  |
| Xiaomi | **Yes** | **Yes** | **Yes** |  |

1. **PDCCH Skip**

OI 4.1 [Other] In case UE cannot monitor DCP due to PDCCH skipping, whether a) Physical layer of UE reports a value of 1 for Wake-up indication bit to higher layer or b) Physical layer of UE does not report Wake-up indication bit to higher layer.

* Will send LS to RAN1, depending on RAN1 decision

**Q4: Do you agree with the open issue list and suggested handling for PDCCH skip?**

|  |  |  |
| --- | --- | --- |
| Company | 4.1 | Comments |
| Nokia | **Yes** | **Q4 from the email discussion was postponed to next meeting, “Q4. Do companies agree that UE ignores PDCCH skipping (i.e. PDCCH skipping is cancelled) while UL HARQ reTx timer is running?”, propose to add it to the list** |
| OPPO | **Yes** |  |
| CATT | **Yes** |  |
| Huawei, HiSilicon | **Yes** |  |
| Xiaomi | **Yes** |  |

1. **UE capabilities**

OI 5.1 [CR rapporteur] How to capture UE AS capabilities for PEI/subgrouping in RAN2 TS?

OI 5.2 [Pre117-e-offline] UE AS capabilities for RLM/BFD relaxation

OI 5.3 [CR rapporteur] How to capture PDCCH monitoring adaptation capabilities in RAN2 TS?

**Q5: Do you agree with the open issue list and suggested handling for UE capabilities for ePowSav topics?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Company | 5.1 | 5.2 | 5.3 | Comments |
| Intel | **Y** | **Y** | **N** | For 5.1, we are just wondering whether it can be part of [Pre117-e-offline] since the open issues is quite clear (See offline 058 report (R2-2201910) or pre meeting summary 008 (R2-2201681)):  FFS on whether the paging enhancement capability indicates support of PEI and subgrouping (as like R1 29-1) or should be split into 2 separate capabilities where one is for PEI support and another for subgrouping support.  FFS if the paging enhancement capability indicates support of PEI and subgrouping (as like R1 29-1), whether the UE supporting the paging enhancement capability always indicate the support of UEID based subgrouping or indicate support of either CN assigned subgrouping or UEID based subgrouping or both.  For 5.3, it is assumed that the UE cap for PDCCH monitoring adaptation capabilities are purely RAN1 features, hence 5.3 will be handled by mega CR. We have an agreement below:   * [058] For UE capabilities of PDCCH monitoring adaptation, implement it as part of the UE capability rapporteur mega CRs from the R1 feature list   New OI  In addition, looking at the pre meeting summary 008, there is another open issue on whether the TRS/CSI-RS occasion support in Idle and inactive mode should be known to the gNB. Please add the following new OI to UE capabilities:  OI5.4: For TRS/CSI-RS occasion support in Idle and inactive mode, should gNB need to know UE support it?  We also think OI5.4 can be discussed as part of [Pre117-e-offline] |
| Nokia | **comment** | **Yes** | **Yes** | Agree with Intel more discussion is needed on paging enhancement capabilities. It could also be categories as Company tdocs invited since it has been a bit difficult to conclude. |
| OPPO | **No** | **Yes** | **Yes** | For 5.1, it should be handled in Pre117-e-offline since we have not reached conclusion on whether to introduce a combined UE capability or separate UE capabilities for PEI and subgrouping. |
| CATT | **comment** | **Yes** | **No** | We agree with Intel and OPPO that 5.1 should be discussed in Pre117-e-offline and 5.3 would be handled in mega CR. |
| Huawei, HiSilicon | **Yes** | **Yes** | **Yes** |  |
| Xiaomi | **No** | **Yes** | **Yes** | Agree with Intel more discussion is needed so can be treated as Company tdocs invited . |

# Conclusion

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

# Reference