**3GPP TSG RAN WG2 Meeting #130 R2-250xxxx
Malta, MT, 19th – 22th May, 2025**

**Agenda item: 8.5.1**

**Source: Apple (Rapporteur)**

**Title: Summary report of [POST130][108][NES] 38.304 CR (Apple)**

**WID/SID: Netw\_Energy\_NR\_enh-Core– Release 19**

**Document for: Discussion and Decision**

# 1 Introduction

This is a summary document on collection of comments to TS 38.304 CR during below running CR discussion:

* [POST130][108][NES] (Apple)

 **Scope:** Update 38.304 running CR (also including this meeting’s agreements and latest other RAN WGs’ inputs) and remaining essential idle/inactive open issues.

 **Intended outcome:** 38.304 running CR and remaining essential idle/inactive open issues.

**Deadline:** Long email discussion.

## Contact information:

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| Samsung | Anil Agiwal | anilag@samsung.com |

# 2 How open issues of RAN2#130 are handled

In RAN2#130, the following running CR was endorsed:

*R2-2503708 Running 38.304 CR for network energy saving Apple (Rapporteur) draftCR Rel-19 38.304 18.4.0 B Netw\_Energy\_NR\_enh-Core*

* *Endorsed.*

The endorsed CR has the following 2 open issues (EN):

* Editor Note: FFS whether the UE always ignores the legacy excluded cell lists received from a cell in which SIBxx is provided, irrespective of whether dedicated excluded cell lists being provided.
* Editor’s Note: FFS whether to explicitly capture the failure case of OD-SIB1 window expiry in 38.304.

After online and offline discussion of RAN2#130, CR rapporteur handled these open issues in the way summarized in Table.1.

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| **Open issue**  | **Any agreement in RAN2#130?** | **How CR Rapporteur handled it in new running CR**  |
| Editor Note: FFS whether the UE always ignores the legacy excluded cell lists received from a cell in which SIBxx is provided, irrespective of whether dedicated excluded cell lists being provided. | Yes:1. Rel-19 excluded cell list can be configured as an empty list. No new UE behavior is introduced (i.e. the UE supporting OD-SIB1 ignores legacy excluded cell list only if NES excluded cell list is present).
 | * Revise the text as follow:

If ~~dedicated inter-frequency and/or intra-frequency excluded cell lists (~~*intraFreqODSIB1-ExcludedCellList*, *~~interFreqODSIB1-ExcludedCellList~~*~~) are~~ is provided in system information, the UE supporting OD-SIB1 ignores *intraFreqExcludedCellList ~~/ interFreqExcludedCellList~~* and doesn’t consider the cell(s) (if any) in ~~the dedicated lists~~ *intraFreqODSIB1-ExcludedCellList* as candidates for cell reselection. If *interFreqODSIB1-ExcludedCellList* is provided in system information, the UE supporting OD-SIB1 ignores *interFreqExcludedCellList* and doesn’t consider the cell(s) (if any) in *interFreqODSIB1-ExcludedCellList* as candidates for cell reselection.1) According to Sharp 001, “inter-frequency and/or intra-frequency” and “ignores intraFreqExcludedCellList / interFreqExcludedCellList” is unclear in which case to ignore which IE. To alleviate the ambiguity, separately describe inter-frequency and intra-frequency.2) (if any) is added to cover the case that the NES dedicated excluded cell list can be empty.* Remove the EN.
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| Editor’s Note: FFS whether to explicitly capture the failure case of OD-SIB1 window expiry in 38.304. | Yes:1. Same as the other 2 agreed cases of OD-SIB1 acquisition failure, capture the failure case of OD-SIB1 window expiry in TS 38.304. RAN2 confirm no other cases need to be considered and specified in TS 38.304.
 | * Capture the failure case of OD-SIB1 window expiry as one condition of UE barring the NES cell.
* The EN is removed.
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# 3 Other changes

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| **Description of the change**  | **Reason for the change** |
| Section 7.1:For a UE in RRC\_IDLE and RRC\_INACTIVE and supporting paging adaptation, if *pagingAdaptation-NS* and *pagingAdaptationNAndPagingFrameOffset* are signaled in *SIB1*, it determines the value of Ns from *pagingAdaptation-NS,* N and PF\_offset from the parameter *pagingAdaptationNAndPagingFrameOffset* as defined in TS 38.331 [3], and only monitors the PO(s) derived from these paging parameters. If *parameter firstPDCCH-MonitoringOccasionOfPO-r19* is signalled in *SIB1*, the UE uses it to determine the PDCCH monitoring occasions for paging as specified in TS 38.331 [3].  | Capture the following RAN2#130 agreement:1. Introduce a new optional firstPDCCH-MonitoringOccasionOfPO-r19 field parameter for Rel-19 UEs that support adaptive paging.
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| Section 7.2.1:For a UE supporting paging adaptation and PEI, if *pagingAdaptationPEI-Config* is signaled in system information, the UE in RRC\_IDLE and RRC\_INACTIVE state monitors the PEI occasion according to *pagingAdaptationPEI-Config* and *firstPDCCH-MonitoringOccasionOfPEI-O-r19* (if configured)*.* | Capture the following RAN2#130 agreement:1. Introduce a new optional firstPDCCH-MonitoringOccasionOfPEI-O-r19 field parameter for Rel-19 UEs that support adaptive paging.
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# 4 Collection of comments on running CR after RAN2#130

Please provide your comments in below table, and Rapporteur will response. Please do not insert any comments in running CR directly, which is hard for Rapporteur to follow all comments.

And based on existing EN and your comments, Rapporteur will identify stage 3 open issues.

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| **Company****+issue #****(e.g. Apple 001)** | **Detailed issue and proposed change** | **Rapporteur response** |
| Samsung 001 | If the cell is to be treated as if the cell status is "barred" due to failing to acqire the *SIB1* upon the expiry of the *SIB1* monitoring window as defined in [4] for the UE supporting OD-SIB1; orAcqire 🡪 acquire | Thanks. Fixed in v01. |
| Samsung 002 | If a UE supporting OD-SIB1 barred a cell due to no available *SIB1* request configuration as defined in section 5.2.2.3.1 of TS 38.331 [3], it considers the cell is no longer barred once its *SIB1* request configuration of the cell is acquiredDelete ‘its’ | Although I think it doesn’t make much difference, but I accept in v01. |
| Samsung 003 | “ The PDCCH monitoring occasions for paging are determined according to *pagingSearchSpace* as specified in TS 38.213 [4] and *firstPDCCH-MonitoringOccasionOfPO* and *nrofPDCCH-MonitoringOccasionPerSSB-InPO* ifconfigured as specified in TS 38.331 [3]. When *SearchSpaceId* = 0 is configured for *pagingSearchSpace*, the PDCCH monitoring occasions for paging are same as for RMSI as defined in clause 13 in TS 38.213 [4].When *SearchSpaceId* = 0 is configured for *pagingSearchSpace*, Ns is either 1 or 2. For Ns = 1, there is only one PO which starts from the first PDCCH monitoring occasion for paging in the PF. For Ns = 2, PO is either in the first half frame (i\_s = 0) or the second half frame (i\_s = 1) of the PF.When *SearchSpaceId* other than 0 is configured for *pagingSearchSpace,* the UE monitors the (i\_s + 1)th PO. A PO is a set of 'S\*X ' consecutive PDCCH monitoring occasions where 'S' is the number of actual transmitted SSBs determined according to *ssb-PositionsInBurst* in *SIB1* and X is the *nrofPDCCH-MonitoringOccasionPerSSB-InPO* if configured or is equal to 1 otherwise. The [x\*S+K]th PDCCH monitoring occasion for paging in the PO corresponds to the Kth transmitted SSB, where x=0,1,…,X-1, K=1,2,…,S. The PDCCH monitoring occasions for paging which do not overlap with UL symbols (determined according to *tdd-UL-DL-ConfigurationCommon*) are sequentially numbered from zero starting from the first PDCCH monitoring occasion for paging in the PF. When *firstPDCCH-MonitoringOccasionOfPO* is present, the starting PDCCH monitoring occasion number of (i\_s + 1)th PO is the (i\_s + 1)th value of the *firstPDCCH-MonitoringOccasionOfPO* parameter; otherwise, it is equal to i\_s \* S\*X. If X > 1, when the UE detects a PDCCH transmission addressed to P-RNTI within its PO, the UE is not required to monitor the subsequent PDCCH monitoring occasions for this PO.“The above procedure to determine PO only uses  *firstPDCCH-MonitoringOccasionOfPO*. Suggest to revise as follows:“ The PDCCH monitoring occasions for paging are determined according to *pagingSearchSpace* as specified in TS 38.213 [4] and *firstPDCCH-MonitoringOccasionOfPO (or*  *firstPDCCH-MonitoringOccasionOfPO-r19* for paging adaptation) and *nrofPDCCH-MonitoringOccasionPerSSB-InPO* ifconfigured as specified in TS 38.331 [3]. When *SearchSpaceId* = 0 is configured for *pagingSearchSpace*, the PDCCH monitoring occasions for paging are same as for RMSI as defined in clause 13 in TS 38.213 [4].When *SearchSpaceId* = 0 is configured for *pagingSearchSpace*, Ns is either 1 or 2. For Ns = 1, there is only one PO which starts from the first PDCCH monitoring occasion for paging in the PF. For Ns = 2, PO is either in the first half frame (i\_s = 0) or the second half frame (i\_s = 1) of the PF.When *SearchSpaceId* other than 0 is configured for *pagingSearchSpace,* the UE monitors the (i\_s + 1)th PO. A PO is a set of 'S\*X ' consecutive PDCCH monitoring occasions where 'S' is the number of actual transmitted SSBs determined according to *ssb-PositionsInBurst* in *SIB1* and X is the *nrofPDCCH-MonitoringOccasionPerSSB-InPO* if configured or is equal to 1 otherwise. The [x\*S+K]th PDCCH monitoring occasion for paging in the PO corresponds to the Kth transmitted SSB, where x=0,1,…,X-1, K=1,2,…,S. The PDCCH monitoring occasions for paging which do not overlap with UL symbols (determined according to *tdd-UL-DL-ConfigurationCommon*) are sequentially numbered from zero starting from the first PDCCH monitoring occasion for paging in the PF. When *firstPDCCH-MonitoringOccasionOfPO (or*  *firstPDCCH-MonitoringOccasionOfPO-r19* for paging adaptation) is present, the starting PDCCH monitoring occasion number of (i\_s + 1)th PO is the (i\_s + 1)th value of the *firstPDCCH-MonitoringOccasionOfPO* *(or*  *firstPDCCH-MonitoringOccasionOfPO-r19* for paging adaptation) parameter; otherwise, it is equal to i\_s \* S\*X. If X > 1, when the UE detects a PDCCH transmission addressed to P-RNTI within its PO, the UE is not required to monitor the subsequent PDCCH monitoring occasions for this PO.“ | Agree with the intention, but revised the text a bit as follows:“*(or firstPDCCH-MonitoringOccasionOfPO-r19* for paging adaptation, if configured)”Fixed in v01.[ER] Prefer the Samsung version |
| Samsung 004 | If parameter *firstPDCCH-MonitoringOccasionOfPO-r19* is signalled in *SIB1*, the UE uses it to determine the PDCCH monitoring occasions for paging as specified in TS 38.331 [3]. Suggest to modify as below to follow the legacy textThe parameter *firstPDCCH-MonitoringOccasionOfPO-r19* for paging adaptation is signalled in *SIB1* for paging in the BWP configured by *initialDownlinkBWP*.For paging in a DL BWP other than the BWP configured by *initialDownlinkBWP*, the parameter *firstPDCCH-MonitoringOccasionOfPO-r19* for paging adaptation is signaled in the corresponding BWP configuration.  | I think the intention of the suggested change is to support (e)redcap UE for paging adaptation. I am not sure whether it is in scope of Rel-19 NES. Because this issue is being discussed under OPPO005 (Question-1) of RRC running CR email discussion, I will wait for the conclusion of OPPO005. As it is a feature combination issue (redcap+paging adaptation), I prefer not to add a new EN for this (i.e. RAN2 contribution driven)[Samsung]: First, how to determine determine the PDCCH monitoring occasions for paging based on  *firstPDCCH-MonitoringOccasionOfPO* is defined in 304 and not 331. 331 only signals the parameter.Second, we need to clarify that  *firstPDCCH-MonitoringOccasionOfPO-r19* in SIB1 is only for  *initialDownlinkBWP*.So we need to replace the text withThe parameter *firstPDCCH-MonitoringOccasionOfPO-r19* for paging adaptation is signalled in *SIB1* for paging in the BWP configured by *initialDownlinkBWP*.The second sentence “ For paging in a DL BWP other than the BWP configured by *initialDownlinkBWP*, the parameter *firstPDCCH-MonitoringOccasionOfPO-r19* for paging adaptation is signaled in the corresponding BWP configuration.” is not needed now.We can decide later after OPPO005 (Question-1) of RRC running CR email discussion is resolved |
| v001 | 7.1 Discontinuous Reception for pagingFor a UE supporting paging adaptation and PEI, if pagingAdaptationPEI-Config is signaled in system information, the UE in RRC\_IDLE and RRC\_INACTIVE state monitors the PEI occasion according to pagingAdaptationPEI-Config and firstPDCCH-MonitoringOccasionOfPEI-O-r19 (if configured).[comment] According to legacy 38304, 7.2.1 Paging Early Indication receptionThe UE may use Paging Early Indication (PEI) in RRC\_IDLE and RRC\_INACTIVE states in order to reduce power consumption. If PEI configuration is provided in system information, the UE in RRC\_IDLE or RRC\_INACTIVE state supporting PEI (except for the UEs expecting MBS group notification) can monitor PEI using PEI parameters in system information according to the procedure described below.the behavior of the UE capable of paging adaptation and PEI should be aligned with the legacy, i.e. UE ‘can monitor’, not ‘monitors’ in the yellow highlighted part. | Thanks for comparing legacy 38.304 text. Fixed in v01. |
| ER01 | Doesn’t -> does not |  |
| ER02 | For the below text, UE can be either idle or inactive, not both.For a UE in RRC\_IDLE and RRC\_INACTIVE and supporting paging adaptation, if *pagingAdaptation-NS* and *pagingAdaptationNAndPagingFrameOffset* are signaled in *SIB1*, it determines the value of Ns from *pagingAdaptation-NS,* N and PF\_offset from the parameter *pagingAdaptationNAndPagingFrameOffset* as defined in TS 38.331 [3], and only monitors the PO(s) derived from these paging parameters. If parameter *firstPDCCH-MonitoringOccasionOfPO-r19* is signalled in *SIB1*, the UE uses it to determine the PDCCH monitoring occasions for paging as specified in TS 38.331 [3]. Suggestion:“For a UE in RRC\_IDLE or RRC\_INACTIVE state and supporting paging adaptation, if pagingAdaptation-NS and pagingAdaptationNAndPagingFrameOffset are signaled in SIB1, the UE determines the value of Ns from pagingAdaptation-NS, N and PF\_offset from the parameter pagingAdaptationNAndPagingFrameOffset as defined in TS 38.331 [3], and only monitors the PO(s) derived from these paging parameters. ” |  |
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# 3 Conclusion

Based on post-meeting email discussion, Rapporteur identify the following stage 3 open issues: