3GPP TSG-RAN WG2 #109bis-e Tdoc R2-20xxxxx

Elbonia, 20th – 30th April 2020

Agenda Item: 5.4.2 LTE changes related to NR

Source: Ericsson

Title: Summary of [AT109bis-e][059][NR15] LTE changes related to NR

Document for: Discussion, Decision

# 1 Introduction

This document contains a list of TDocs to be discussed in the offline discussion below. Companies are invited to give their views on each TDoc submitted.

* [AT109bis-e][059][NR15] LTE changes related to NR (Ericsson, CATT, Google, Nokia)

Scope: Treat all docs under AI 5.4.2

Part 1: Determine which issues that need resolution, find agreeable proposals. Deadline: April 23 0700 UTC

Part 2: For the parts that are agreeable, discussion will continue to agree on CRs.

# 2 List of TDocs

Companies are invited to give their views on each TDoc submitted below. TDoc containing Rel-16 shadow CR is listed together with the Rel-15 CR.

## R2-2002645 (+ R2-2002597) – Calculation of shortResumeMAC-I

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| **Company** | **Views** |
| CATT | The problem exists, but it is not backwards compatible. But we think the mistaken spec is TS 33.501…It was an agreement in RAN2#103 over R2-1811656: “Align the ResumeMAC inputs for LTE/5GC with NR”.The CR which changes TS 33.501 to the current status is S3-190425—it seems to be a part of many CRs which aims to add E-UTRA/5GC descriptions into TS 33.501, and added many texts. No related discussion is found. It is the 33.501 that doesn’t algin with the agreement made in RAN2.  |
| Lenovo | We agree that there is a misalignment between RAN2 and SA3 specs, but we are not sure whether the issue comes from RAN2 or SA3. This should be clarified at first. |
| Ericsson | Agree |
| Huawei | Similar view with CATT. SA3 is discussing deleting this parameter (S3-200183). As far as we know, several companies in SA3 support deleting this parameter. No action in RAN2 is needed.Besides, this is an NBC change, and should not be introduced at this stage. |
| Google | We understand this is a misalignment between RAN2 and SA3. We prefer make SA3 specification align with RAN2 specification. |
| Samsung | We assume this will be corrected in SA3 i.e. no action for RAN2 |
| vivo | We understand this is supposed to be corrected in SA3. |

Summary: All companies acknowledge that there is a misalignment between 36.331 and 33.501. However, most companies think that SA3 should correct 33.501 and therefore the CR should not be pursued. The rapporteur suggests to discuss if an LS need to be sent to SA3 to inform them of RAN2’s decision.

1. The CR in R2-2002645 (Calculation of shortResumeMAC-I) is not pursued. RAN2 to discuss if an LS should be sent SA3 to ask them to correct the shortResumeMAC-I calculation in 33.501.

## R2-2002788 – Release of EN-DC

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| **Company** | **Views** |
| Nokia | Did we misunderstand something? The release and add would automatically do the parts that the CR wants to include. Could you please clarify? |
| CATT | The *p-MaxEUTRA, p-MaxUE-FR1*, *tdm-PatternConfig* are aplied for (NG)-ENDC only, so upon the MR-DC release, these parameters should be released too. As in RRC reestablishment and RRC resume procedure, the UE automatically release the MR-DC and release the *p-MaxEUTRA, p-MaxUE-FR1*, *tdm-PatternConfig* too, it is reasonable to relase the *p-MaxEUTRA, p-MaxUE-FR1*, *tdm-PatternConfig* automatically for UE upon the NW indicate the UE release the MR-DC explicity because there is no explicit siganling which can release the *p-MaxEUTRA, p-MaxUE-FR1*, *tdm-PatternConfig* in current spec, if the UE keep the *p-MaxEUTRA, p-MaxUE-FR1*, *tdm-PatternConfig* upon the MR-DC released by NW, the power will be limited for UE when the UE configured with SA, however if the NW wants to keep the *p-MaxEUTRA, p-MaxUE-FR1*, *tdm-PatternConfig* upon the MR-DC reconfigruation with full configuration for SCG configuration, the NW can include the *p-MaxEUTRA, p-MaxUE-FR1*, *tdm-PatternConfig* in the message. so we suggest to relase the *p-MaxEUTRA, p-MaxUE-FR1*, *tdm-PatternConfig* upon the NW indicate the UE relase the MR-DC. |
| Ericsson | We agree with Nokia. This issue was already discussed in RAN2#107bis meeting (we brought a CR for explictly release these three fields in the RRC resume procedure and the RRC reconfiguration procedure).The outcome was that it was useful for the RRC resume procedure because if the UE was resuming in a different cell, this cell was not aware if those paramenters were released or not (even if the real issue was with the tdm-pattern). According to this, we brought a CR in RAN2#108 that was agreed.Regarding the RRC reconfiguration case, the outcome of the offline discussion #25 of RAN2#107bis was that in this case of reconfiguration the network knows whether the UE is configured with tdm-pattern or not (same for the power fields) and thus can release it if necessary.According to this, we do not need to discuss this again and the CR is not needed. |
| Huawei | This issue was submitted by Ericsson and discussed online and offline, so we don’t think it needs to be discussed again. |
| Google | We don’t think the CR is needed as described below.1. According to the ASN.1 structure below. the UE releases the *p-MaxEUTRA-r15* if the *nr-Config* is set to “release”. For the “release and add” case, the network always includes the *p-MaxEUTRA-r15* so it doesn’t matter whether the UE releases *p-MaxEUTRA-r15*.
2. The field description of *tdm-PatterConfig-r15* describes “*UL/DL reference configuration indicating the time during which a UE configured with (NG)EN-DC is allowed to transmit.*”. In LTE SA, the UE anyway does not use the tdm-PatterConfig-r15. The network always includes the *tdm-PatterConfig-r15* upon configuring (NG)EN-DC so it doesn’t matter whether the UE releases *tdm-PatterConfig-r15*.
3. The need code for *p-MaxUE-FR1-r15* is “OR” so the network can release it in the *RRCConnectionReconfiguration* configuring MR-DC release.

 RRCConnectionReconfiguration-v1510-IEs ::= SEQUENCE { nr-Config-r15 CHOICE { release NULL, setup SEQUENCE { endc-ReleaseAndAdd-r15 BOOLEAN, nr-SecondaryCellGroupConfig-r15 OCTET STRING OPTIONAL, -- Need ON p-MaxEUTRA-r15 P-Max OPTIONAL -- Need ON } } OPTIONAL, -- Need ON sk-Counter-r15 INTEGER (0.. 65535) OPTIONAL, -- Need ON nr-RadioBearerConfig1-r15 OCTET STRING OPTIONAL, -- Need ON nr-RadioBearerConfig2-r15 OCTET STRING OPTIONAL, -- Need ON tdm-PatternConfig-r15 TDM-PatternConfig-r15 OPTIONAL, -- Cond FDD-PCell nonCriticalExtension RRCConnectionReconfiguration-v1530-IEs OPTIONAL}RRCConnectionReconfiguration-v1530-IEs ::= SEQUENCE { securityConfigHO-v1530 SecurityConfigHO-v1530 OPTIONAL, -- Cond HO-5GC sCellGroupToReleaseList-r15 SCellGroupToReleaseList-r15 OPTIONAL, -- Need ON sCellGroupToAddModList-r15 SCellGroupToAddModList-r15 OPTIONAL, -- Need ON dedicatedInfoNASList-r15 SEQUENCE (SIZE(1..maxDRB-r15)) OF DedicatedInfoNAS OPTIONAL, -- Cond nonHO p-MaxUE-FR1-r15 P-Max OPTIONAL, -- Need OR smtc-r15 MTC-SSB-NR-r15 OPTIONAL, -- Need OP nonCriticalExtension SEQUENCE {} OPTIONAL} |
| Samsung | Similar view as expressed by others i.e. no need to introduce any changes (as discussed earlier) |
| vivo | This issue has already been discussed. We do not think we have re-discuss again. |

Summary: Most companies think that this issue has already been discussed and that there is no need to introduce any changes.

1. The CR in R2-2002788 (Release of EN-DC) is not pursued.

## R2-2003684 – UE measurement capability requirements for NR

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| **Company** | **Views** |
| Nokia | We are in general okay with the principle but then about the exact values here. Is UE really expected to support the minimum of 32 cells for measObject NR (inter-RAT in this case, as CR is for LTE) and 32 cells in blackcell list? The table generally looks quite consistent and that value has remained fairly the same? Could you please explain? |
| Ericsson | We are also in general fine with this. But would also like to know why #minBlackCellRangesperMeasObjectNR is 32 in this CR while the corresponding value in 38.306 is 8. Is this a simple typo perhaps? If not a typo, please explain.Excerpt from 38.306:*#minBlackCellRangesperMeasObjectNR The minimum number of blacklist cell PCI ranges that a UE shall be able to store associated with a MeasObjectNR. 8* |
| Lenovo | Partly ok. For blacklist the proposed value of 32 is ok, but #minCellperMeasObjectNR=32 is not ok as for NR only detected cells are supported, i.e. UE will not be configured by MeasObjectNR with a list of NR cells to measure. Therefore, there is no need to specify such a requirement.@Ericsson: The NR requirement in 38.306 refers to the max number of PCI ranges which can be configured for blacklisted cells, i.e. it is not directly related to the number of blacklisted cells. |
| Huawei | We are OK with the second field of the CR (same view with Lenovo).Regarding the issue raised by Ericsson, we checked 38331, 38306 and 36331:**1) 38331 measObjectNR**Maximum number of cells in cellsToAddModList: 32 (maxNrofCellMeas)Maximum number of PCI ranges in blackCellsToAddModList: 8 (maxNrofPCI-Ranges)**2) 38306:**#minCellperMeasObjectNR: 32#minBlackCellRangesperMeasObjectNR: 8**3) 36331 measObjectNR:** No neighbour cell listMaximum number of PCI ranges in blackCellsToAddModList: 32 (maxCellMeas)**4) 36331 measObjectEUTRA:** Maximum number of cells in cellsToAddModList: 32 (maxCellMeas)Maximum number of PCI ranges in blackCellsToAddModList: 32 (maxCellMeas)**5) 36331 UE capability constraints for EUTRA:**#minCellperMeasObjectEUTRA: 32#minBlackCellRangesperMeasObjectEUTRA: 32Since 38306 is only related to NR capability, and LTE configured inter-RAT NR measurement belongs to LTE capability, we think it’s OK that the figures are inconsistent between 38306 and 36331, as long as the figures within 36331 itself are aligned.In addition, since there’s no neighbour cell list in measObjectNR, we suggest to only keep “#minBlackCellRangesperMeasObjectNR“and remove “#minCellperMeasObjectNR“. |
| Google | Hopefully our comments below can address companies’ concerns.@Ericsson: LTE RRC does not configure PCI range for blackCellsToAddModList in MeasObjectNR so we propose to specify the number of blacklisted cells to be 32 as other RATs.@Nokia: 38.306 specifies #minCellperMeasObjectNR to be 32 so we just follow the requirement specified in NR for LTE.@Lenovo/Huawei: it is optional to configure the list of cells to measure so the NR requirement in 38.306 is also applied for the case that the list is not configured. Besides, the number is minimum rather than maximum. If we don’t specify #minCellperMeasObjectNR in LTE, then we don’t have any requirement on the minimum number of neighbour cells that a UE shall be able to store within a MeasObjectNR.  |
| Samsung | Similar view as expressed by Lenova i.e. measObjectNR in LTE does not contain list of neighbouring cells (i.e. for IRAT measurements we cannot specify cell individual offset) |
| vivo | It is acceptable,but the *minBlackCellRangesperMeasObjectNR* value should be inline with 38.306 |

Summary: Companies are generally fine with adding measurement capability requirements for NR but there are different opinions of which capabilities to be added and the values for those capabilities.

1. Measurement capability requirement for NR should be added in LTE RRC. Details to be discussed in part 2 of this email discussion and the CR in R2-2003684 is used as baseline.

## R2-2003156 (+ R2-2003157) – TTI bundling config. in NE-DC

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| **Company** | **Views** |
| Ericsson | We agree that current specification does not allow TTI bundling in SCG.When DC was added to LTE, it was discussed whether to support TTI bundling in the SCG. There was no clear use case for this and RAN2 instead decided that only the MCG can configure TTI bundling.We think that the same argument above for normal LTE-DC applies also in NE-DC. I.e. there is no clear use case. The only difference is that the MCG happens to be an NR-node rather than an LTE-node.This CR seems to be changing behaviour. We think that it is too late to do this change and also we do not see the need to add this new behaviour.We think RAN2 should not agree this CR.  |
| Huawei | This is not backward compatile and will change network and UE behaviours, so we prefer not to have this CR. |
| Google | We don’t know a use case for TTI bundling in SCG in NE-DC so we don’t support the CR. If there is a use case, we prefer to have the CR for Release 16 with a capability signaling. |
| Samsung | Same view as expressed by others i.e. prefer not to agree the CR |
| vivo | We think the current specification does not allow TTI bundling in SCG. But, we think we need more discussion on the CR. |
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Summary: Most companies think that it’s too late to introduce support for TTI bundling for SCG in NE-DC in Rel-15 and some companies also questioned the use case.

1. The CR in R2-2003156 (TTI bundling configuration in NE-DC) is not pursued.

# Conclusion (Part 1)

4 CRs were submitted under AI 5.4.2 LTE changes related to NR.

* R2-2002645 (+ R2-2002597) – Calculation of shortResumeMAC-I
* R2-2002788 – Release of EN-DC
* R2-2003684 – UE measurement capability requirements for NR
* R2-2003156 (+ R2-2003157) – TTI bundling config. in NE-DC

Based on the discussion in part 1 of the email discussion the following is proposed:

[Proposal 1 The CR in R2-2002645 (Calculation of shortResumeMAC-I) is not pursued. RAN2 to discuss if an LS should be sent SA3 to ask them to correct the shortResumeMAC-I calculation in 33.501.](#_Toc38463678)

[Proposal 2 The CR in R2-2002788 (Release of EN-DC) is not pursued.](#_Toc38463679)

[Proposal 3 Measurement capability requirement for NR should be added in LTE RRC. Details to be discussed in part 2 of this email discussion and the CR in R2-2003684 is used as baseline.](#_Toc38463680)

[Proposal 4 The CR in R2-2003156 (TTI bundling configuration in NE-DC) is not pursued.](#_Toc38463681)