**3GPP TSG-RAN2#114-e R2-21xxxx**

**Electronic meeting, May 19 – 27, 2021**

**Source: ZTE Corporation (rapporteur)**

**Title: Report for offline discussion [AT114-e][021][NR16] RRC I (ZTE)**

**Agenda item:**  **6.1.4.1.1**

**Document for:** **Discussion and Decision**

# Introduction

In this document company views on the following tdocs are collected:

* [AT114-e][021][NR16] RRC I (ZTE)

 Scope: Treat R2-2105516, R2-2105179, R2-2104920, R2-2105925, R2-2105926, R2-2105896, R2-2105186, R2-2105421, R2-2106281, R2-2105964, R2-2105965, R2-2105394,

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

 Intended outcome: Report and Agreed CRs.

 Deadline: Schedule A

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# Handling of T310 and T312

In R2-2105516 it is proposed to:

1. Add “stop T310 for the SCG, if running;” in the initiation of SCG failure information procedure as specified in 5.7.3.2.

2. Add “stop T312 for the SCG, if running;” in the initiation of SCG failure information procedure as specified in 5.7.3.2.

3. Add “upon the expiry of T312 in corresponding SpCell” as an additional stopping criterion of T310 in 7.1.1.

The rapporteur would like to point out the following:

* related discussion happened at R2#113bis-e (see offline [005] report in R2-2104633) where the following was noted in chairman’s notes:

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| ***R2#113-bis agreement****Upon initiating SCG failure information procedure, if T310/T312 for the PSCell expires before the SCG link is recovered, UE does not trigger another SCG failure information procedure* |

* Related CRs were also submitted to this meeting in R2-2106190 and R2-2106191 (companies are encouraged to also note the discussion in the offline [005] at this meeting hence whilst answering the question below.

Based on the above companies are invited to answer the following:

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| Q 1: Considering the above aspects, do you agree with the changes proposed in R2-2105516? |
| Company | Agree/Disagree | Comments if any |
| Ericsson | Disagree | This was already discussed in RAN2#108 and the outcome was that nothing is broken. We prefer to stick to that decision since no problem in the field have been observed so far.From chairman note of RAN2#108 (Reno):[R2-1915352](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_108/Docs/%0DR2-1915352.zip) Stop timer T310 in SCGFailureInformation Ericsson CR Rel-15 38.331 15.7.0 1366 - F NR\_newRAT-Core- Huawei think nothing is broken. Samsung agrees and think the only side effect would be that the UE may send SCG failure a second time, but there is no problem. - LG think this is not needed. - MTK think the CR makes sense but is not important. * Not pursued
 |
| ITRI  | Agree to 1st, 2nd , and 3rd changes (Proponent) | In our understanding, the contribution [R2-1915352](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_108/Docs/%0DR2-1915352.zip) discussed in RAN2#108 aims to change version 15.7.0 of TS 38.331 where there is no T312 (and thus there are on problems caused by e.g. T312 expiry after T310 expiry). The reason for change of [R2-1915352](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_108/Docs/%0DR2-1915352.zip) is to avoid any unnecessary UE operations, e.g. RLM on the SCG, when the SCG failure information procedure is triggered.Different from [R2-1915352](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_108/Docs/%0DR2-1915352.zip), the contribution R2-2105516 aims to change version 16.4.1 of TS 38.331 and discusses the problems caused by T312 (or T310) expiry after T310 (or T312) expiry. That’s the reason why this CR suggests not only stopping T310, if running, but also stopping T312, if running, in 5.7.3.2.The major problem is not sending SCG failure information twice. Before SCG failure information is sent, SCG MAC is reset (in 5.7.3.2) which, as analysed in R2-2105516, may cause the early RLF handling to be terminated.Finally, the third chage is related to T310 in both PCell and PSCell. That is, we think T310 should be stoppted if MCG failure information procedure, connection re-establishment procedure, and SCG failure information procedure are triggerred. In summary, its stopping criterion should include “upon the expiry of T312 in corresponding SpCell.”  |
| MediaTek | No strong view | The correction in general is fine but we also agree that it is not essential. |
| Huawei, HiSilicon | Agree | T310 and T312 are linked and will be stopped at the same time when SCG fails. When one expires, another will also be stopped. |
| Qualcomm Incorporated | Agree | Agree to the analysis by the email discussion moderator, but we think the proposal in the CR is clean way to avoid running into the situation addressed by the other CRs. |
| CATT | Yes with comment | For MCG failure, the word “PCell” other than “MCG” is used, so it is suggest change the wording to:1>  stop T310 for the ~~SCG~~PSCell, if running;1>  stop T312 for the ~~SCG~~PSCell, if running; |
| ZTE | Disagree | Since this was discussed in the past and agreed not to be pursued, we think we don’t need to make this change |
| LGE | No strong view | We understand the intention but we also think that the changes are not essential. |
| Nokia | Disagree | There is a point to the correction but as Ericsson pointed out it is not essential and already known issue. |
| ITRI (second reply) | See comments | Agree to CATT’s suggestion.Regarding the CRs discussed in the past, in our understanding, they addressed the unnecessary UE operations, e.g. RLM, and the twice (redundant) SCG failure information procedure; while this CR focuses on preventing the early RLF handling, e.g. SN/SCG change triggered due to previously expired T312 (or T310), from being terminated. |
| vivo | Disagree with comments | The intention is reasonable. However, the behaviour of UE seems the same with [R2-1915352](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_108/Docs/%0DR2-1915352.zip), i.e., send the SCG failure twice. With the agreement that *UE does not trigger another SCG failure information procedure before the SCG link is recovered*, no problem is foreseen.If it was not agreed before then we don’t see any reason to agree this proposal this time unless the change has other intention. |
| Apple | Agree | It’s helpful to make the spec clearer. |

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|  | Agree | Disagree | Neutral/Unclear |
| Stats | 6 | 4 | 2 (said changes not essential) |
| Moderator Observations: * There is not enough support to make this change
* Some companies think this was already discussed

**Proposal 1: Changes proposed in R2-2105516 are not pursued** |

# SNPN corrections

In R2-2105179, it is proposed to:

1. Add SNPN to the field description of *uac-BarringForCommon, UAC-BarringPerPLMN-List, CellIdentity.*
2. For the *UAC-BarringPerPLMN-List/uac-AccessCategory1-SelectionAssistanceInfo/uac-AC1-SelectAssistInfo,* clarified that *“*the 1st entry in the list corresponds to the first PLMN or SNPN across the *plmn-IdentityList* and *npn-IdentityInfoList*, the 2nd entry in the list corresponds to the second PLMN or SNPN across the *plmn-IdentityList* and *npn-IdentityInfoList* and so on.”

*Note:* this wording of the modification is also aligned with that in the field description of Plmn-IdentityIndex in the UAC-BarringPerPLMN-List

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| ***UAC-BarringPerPLMN-List* field descriptions** |
| ***plmn-IdentityIndex***Index of the PLMN or SNPN across the *plmn-IdentityList* and *npn-IdentityInfoList* fields included in SIB1. |

Based on the above companies are invited to answer the following:

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| Q 2: Do companies agree with the changes proposed in R2-2105179? |
| Company | Agree/Disagree | Comments if any |
| Ericsson | Agree |  |
| MediaTek | Agree |  |
| ZTE | Agree |  |
| Qualcomm Incorporated | Agree |  |
| CATT | Agree |  |
| LGE | Agree |  |
| Nokia | Agree | This is more editorial, could this be merged away to rapporteur CR? |
| Huawei, HiSilicon | Agree with comment | We share the intention, and would like to propose the rewording as follows; also agree with Nokia that this could be merged to rapporteur CR.  |
| Apple | Agree |  |

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|  | Agree | Disagree | Neutral/Unclear |
| Stats | 9 | 0 | 0 |
| Moderator observations: * Change seems agreeable

Proposal 2: Update the CR R2-2105179 to take into consideration the comments made (see input from Huawei) and review in phase-2 |

# Correction on reportSlotOffsetList

In R2-2104920 it is proposed to remove the text limiting the applicability of reportSlotOffsetList only to DCI format 0\_0 in the field description of *reportSlotOffsetList.*

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| Q 3: Do companies agree with the changes proposed in R2-2104920? |
| Company | Agree/Disagree | Comments if any |
| Huawei, HiSilicon | Agree |  |
| Qualcomm Incorporated | Agree (Proponent) |  |
| ZTE | Agree |  |
| Nokia | Agree | This is correct in our understanding |
| Ericsson | Agree |  |
| Apple | Agree |  |

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| --- | --- | --- | --- |
|  | Agree | Disagree | Neutral/Unclear |
| Stats | 6 | 0 | 0 |
| Moderator observations: * Change seems agreeable

Proposal 3: Agree the CR in R2-2104920 |

# Changes for NR-U

In R2-2105925 it is proposed to add references to tables 6.3.3.2-3 (38.211) in the field description of msg1-SubcarrierSpacing. Further, since L1151 and L571 are introduced in the shared spectrum, reference to Table 6.3.3.1-2 is also be added.

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| Q 4: Do companies agree with the changes proposed in R2-2105925? |
| Company | Agree/Disagree | Comments if any |
| MediaTek | Agree | It seems that this one could just be included in Rapporteur’s CR |
| Ericsson | Agree | Can be included in Rapporteur’s CR. |
| Lenovo | Agree partly | For R15/16 the Table 6.3.3.1-2 for L139 seems missing too.For R16 the Table 6.3.3.2-4 (Random access configurations for FR2 and unpaired spectrum) seems missing too.Agree with others that these minor changes can be merged into rapporteur CRs.Rapporteur comments: For L139, the SCS is mandatory. So Table 6.3.3.2-4 is not needed it seems. Table 6.3.3.2-4 is used for PRACH format A1, A2,....C2, not for long format. While for L1151 and L571, Table 6.3.3.1-2 is enough. |
| Huawei, HiSilicon | Agree | Can be included in Rapporteur’s CR. |
| Qualcomm Incorporated | Agree |  |
| ZTE | Agree (Proponent) |  |
| LGE | Agree |  |
| Fujitsu | Agree |  |
| Nokia | Agree | Agree with MediaTek |
| Apple | Agree |  |

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|  | Agree | Disagree | Neutral/Unclear |
| Stats | 10 | 0 | 0 |
| Moderator observations: * Change seems correct and agreeable
* 5 companies said that this can be merged into rapporteur CR
* 1 company pointed out that R15 also may need updates

Proposal 4: For the CR in R2-2105925: Provide R15 draft per the comment above (to be reviewed in phase-2) and can merge both R15 and R16 CRs into rapporteur CR eventually (if agreeable) after phase-2 |

In R2-2105926 it is proposed to remove the “If ssb-PositionQCL is configured” from the field description of ssb-PositionsInBurst in servingCellConfigCommon, since this part of description is related to unlicensed spectrum where this field is always configured.

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| Q 5: Do companies agree with the changes proposed in R2-2105926? |
| Company | Agree/Disagree | Comments if any |
| MediaTek | No strong view | Fine with this change but this is not essential. It does not have any functional change either. We can put this in Rapporteur’s CR if needed. |
| Ericsson | Agree | Can be included in Rapporteur’s CR. |
| Huawei, HiSilicon | CR maybe not needed | The same issue has been covered in IPA CR in R2-2105104.  |
| Qualcomm Incorporated | Agree |  |
| ZTE | Agree (Proponent) | With regards to the IPA CR in R2-2105104, we note that the change has been made for SSB-ToMeasure, this issue however still exists in the ssb-PositionInBurst in ServingCellConfigCommon |
| LGE | - | The change is covered in IPA CR in R2-2105104 |
| Fujitsu | Agree |  |
| Nokia | Agree, but | Editorial but seems to be correct. One cannot configure incorrectly without CR. Again rapporteur CR seems right place |
| Apple | Agree | The IPA CR R2-2105104 is for SSB-ToMeasure. |

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|  | Agree | Disagree | Neutral/Unclear |
| Stats | 6 | 0 | 2 |
| Moderator observations: * Change seems correct and agreeable
* 2 companies pointed out similar change captured in the IPA CR in R2-2105104 but it seems this is addressing a different section in the spec
* 3 companies think can be merged to rapporteur CR

Proposal 5: Agree and merge the contents of R2-2105926 into rapporteur CR.  |

In R2-2105896 and in R2-2105186, the main proposal is to extend the number of cells for search space switching trigger configuration. So, first we will discuss if companies are okay to extend the number of cells as proposed in these.

As noted in R2-2105896, current 38.331 only allows for switching trigger configuration of 4 elements, while RAN1’s intention was to allow 16 elements. Considering that this an NBC change, the first question is whether companies want to align this ambiguity in Rel-16 as proposed by the proponents.

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| Q 6: Are companies okay to accept the NBC change to align the RAN2 specs to the RAN1 intention to have up to 16 elements for switching trigger? |
| Company | Agree/Disagree | Comments if any |
| MediaTek | See comment | We agree to extend the number but it is not necessary to be a NBC change. |
| Ericsson | Agree | Proponent of R2-2105896. The number needs to be extended according to the LS from RAN1. We could accept an NBC change and no UE capability.  |
| Lenovo | Disagree | After ASN.1 freeze we should avoid NBC changes. Therefore, we prefer the BC change as addressed in R2-2105896. |
| Huawei, HiSilicon |  [Added comments in V19] | [Added in V19] We agree with the intention, however suggest to implement in BC way.  |
| Qualcomm Incorporated | Can accept | Non-backward compatible ASN.1 change should be avoided to make the change isolated, i.e. not affect other part of ASN.1. |
| ZTE | Disagree | The change should be done in a BC way from ASN.1 perspective. We note that the change is functionally NBC anyway, but we can accept the change if majority prefer to go this way.  |
| LGE | Agree |  |
| Nokia | See comment | We guess probably better to have new extension with 12 elements plus original one. Or just make NBC and increase original to 16. |
| Apple | Disagree | We should avoid NBC change. |

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|  | Agree | Disagree | Neutral/Unclear |
| Stats | 2 | 6 | 1 |
| Moderator observations: * Change seems correct and agreeable
* BC change seems preferable by majority and is inline with the norm

Proposal 6: For R2-2105896 and R2-2105186, pursue a backwards compatible CR to align RAN2 specs with RAN1 intention to have up to 16 elements for switching trigger |

The next question is whether we need a new UE capability for this:

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| Q 7: Do we need to define a new UE capability to extend the list size? Yes (define new capability)/No(don’t define new capability)/No-changes (disagree with change – see Q6) |
| Company | Yes / No / No- changes | Comments if any |
| MediaTek | Prefer yes | But we can follow majority. If most companies think there is no real NR-U implementation now. Make this conditional mandatory to original feature is fine.  |
| Ericsson | Yes / No | We would be fine both with and without a UE capability. |
| Lenovo | No | We think that a capability is not needed. At least in RAN1 there was no discussion about a capability when they made the agreement |
| Huawei, HiSilicon | Yes | We think UE capability is needed. |
| Qualcomm Incorporated | No | But can also accept introducing it. |
| ZTE | Yes | But we can also accept not introducing it |
| LGE | Yes |  |
| Nokia | Prefer yes | We think RAN1 did not see need for capability thus that is not needed as such. Maybe only if required for ASN.1 update. |
| Apple | Yes | We prefer having UE capability for the extended list. |

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|  | Agree | Disagree | Neutral/Unclear |
| Stats | 5 | 1 | 3 |
| Moderator observations: * Most companies seem to have no strong view either way, 2 companies did say that capability should be defined.
* We can try the route with capability which seems to be the normal way (and it seems at least two companies insist on this)

Proposal 7: Proponents of R2-2105896 should compile a BC CR and also create a corresponding UE Capability CR and these will be reviewed in phase-2 (please take the comments below for Q8 into account) |

Finally, we will collect general views on the changes proposed in R2-2105896 and in R2-2105186 any comments on the actual changes so that a CR can be created in case there is willingness to agree such change.

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| Q 8: Assuming we go ahead with the change, do companies have any comments to the actual changes proposed in R2-2105896 and R2-2105186?  |
| Company | Detailed comments on changes proposed in R2-2105896 and R2-2105186 |
| MediaTek | Looks fine in general. |
| Ericsson | Proponent of R2-2105896 and issue raiser. The change in R2-2105186 is not correct as the field needs to be dummified and the list extended according to our proposal in R2-2105896. |
| Lenovo | Regarding search space switching trigger configuration we prefer the NBC change as addressed in R2-2105896. Regarding the options, either Option 1 or Option 2 is fine with us with slight preference for Option 1 (Dummify the legacy fields) as it looks cleaner.Other changes like UE capability and naming changes are not needed. |
| Huawei, HiSilicon | Agree with the intention and we can discuss on the actual changes. [Added in v19] NBC changes shall be avoided. |
| Qualcomm Incorporated | While we understand the change will require implementation change, non-backward compatible ASN.1 change in 5186 should be avoided to make the change isolated, i.e. not affect other part of ASN.1. We prefer the changes in 5896 in that sense. |
| ZTE | The change should be made in a BC way (i.e. as in 5896). We also think dummifying the old fields is preferable. |
| LGE | Agree with the intention |
| Nokia | Agree with MTK |
| Apple | We prefer the change from 5896 TP, which is backward compatible. |
| Proposal 8: Take the comments above into account and create updated CRs (for RRC and capability CR).  |

# CGI reporting for SNPN

In R2-2106281 it is mentioned that in case of NPN-only cell, the *cellReservedForOtherUse* included in SIB1 is set to “true” and the PLMN Identities in the *plmn-IdentityInfoList* in SIB1 shall be considered as invalid. However, according to the current CGI reporting procedure, the UE reports the *plmn-IdentityInfoList* regardless of the value of the *cellReservedForOtherUse* for the concerned cell. As a result, the gNB cannot identify whether the *plmn-IdentityInfoList* received in the CGI reporting is valid (in case of non-NPN-only cell) or not (in case of NPN-only cell), and is consequently unable to judge correctly whether the concerned cell is an NPN-only cell.

In R2-2105421, it was first proposed to confirm that UE not supporting nr-CGI-Reporting-NPN shall report the obtained PLMN-IdentityInfoList IE from the indicated NR cell as part of CGI reporting procedure irrespective of the value of cellReservedForOtherUse IE.

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| Q 9: Do companies agree that UE not supporting nr-CGI-Reporting-NPN shall report the obtained PLMN-IdentityInfoList IE from the indicated NR cell as part of CGI reporting procedure irrespective of the value of cellReservedForOtherUse IE?  |
| Company | Agree / Disagree  | Comments if any |
| Ericsson | Agree | Yes, this is in line with what legacy (Rel-15) UEs already do. |
| MediaTek | Agree | We cannot change Legacy UE behavior anyway.  |
| Huawei, HiSilicon | See comments | The answer of this Question depends on which solution if finally selected. If Solution A in R2-2106281 or solution in R2-2105421 is finally agreed, it doesn’t make much sense to discuss this issue as anyway the UE will report the PLMN list as long as the PLMN list is obtained as in the current Spec, irrespective of the UE’s capability of nr-CGI-Reporting-NPN. The solution is just to add something more on top of that. If Solution B in R2-2106281 is finally adopted, it is worth facing this question, as it intends to change the conditions on when the UE shall report PLMN identity list. Intuitively, It sounds reasonable for a UE capable of NPN related CGI reporting to indicate whether the cell indicated is further an NPN*-only* cell or not, via the presence of PLMN identity list as in Solution B. |
| Lenovo | Agree | We prefer not to change legacy UE behaviour. |
| ZTE | Agree |  |
| LGE | Agree | We should not change the behaviour of UE not supporting nr-CGI-Reporting-NPN. |
| Qualcomm Incorporated | Agree | As in release-15 |
| CATT | Agree |  |
| Nokia | Agree |  |
| vivo | Agree |  |
| Apple | Agree |  |

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| --- | --- | --- | --- |
|  | Agree | Disagree | Neutral/Unclear |
| Stats | 10 | 0 | 1 |
| Moderator observations: * Most companies agree
* 1 company points out that there is some dependency on the chosen solution

Observation 9: UE not supporting nr-CGI-Reporting-NPN shall report the obtained PLMN-IdentityInfoList IE from the indicated NR cell as part of CGI reporting procedure irrespective of the value of cellReservedForOtherUse IE  |

Meanwhile the second proposal in R2-2105421 is that “UE supporting nr-CGI-Reporting-NPN reports the cellReservedForOtherUse IE as part of CGI reporting procedure if the concerned cell is NPN-only cell”

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| Q 10: Do companies agree that UE supporting nr-CGI-Reporting-NPN reports the cellReservedForOtherUse IE as part of CGI reporting procedure if the concerned cell is NPN-only cell?  |
| Company | Agree / Disagree  | Comments if any |
| Ericsson | Agree | Another possibility, which was already discussed in Rel-16, is to set the first PLMN ID in the PLMN identity list to a known dummy value in NPN only cells and use this information to determine if the cell is NPN only. The benefit of this approach is that it also works for legacy UEs. However, since it difficult to agree on what this dummy PLMN ID should be it might be better to also report the *cellReservedForOtherUse* flag as part of the CGI reporting. |
| MediaTek | See Comment | We prefer solution A below. The only difference is to have a new UE capability for that. |
| Huawei, HiSilicon | Partially agree, with comment | This solution in R2-2105421 is basically in a similar logic as Solution A in R2-2106281. The main difference is that this solution does not introduce a new UE capability but relies on the existing capability of nr-CGI-Reporting-NPN. However, there could be a problem of relying on the existing capability that, for a UE with this existing capability, the gNB, when receiving the CGI reporting from this UE, still cannot differentiate whether the UE is a new UE already implementing this change and thus really setting this *cellReservedForOtherUse* flag in the CGI reporting, or it is an old UE not implementing this change and thus being unable to set this *cellReservedForOtherUse* flag at all. This means, there is some confusion to the NW left-over by this solution, and this problem is exactly the motivation why a new capability is proposed in R2-2105421.From our perspective, if RAN2 decides to settle this issue, we prefer a solution that can solve the problem more thoroughly as in Solution A below. |
| Lenovo | Agree | Instead of introducing a new capability we prefer to extend the existing capability nr-CGI-Reporting-NPN for reporting the cellReservedForOtherUse IE. |
| ZTE | Disagree | In our understanding, the intention of this proposal was to solve the below issue (as described in the R2-2106281) According to the current CGI reporting procedure, the UE reports the *plmn-IdentityInfoList* regardless of the value of the *cellReservedForOtherUse* for the concerned cell. As a result, the gNB cannot identify whether the *plmn-IdentityInfoList* received in the CGI reporting is valid (in case of non-NPN-only cell) or not (in case of NPN-only cell), and is consequently unable to judge correctly whether the concerned cell is an NPN-only cell. Then this proposal suggests the UE to report the *cellReservedForOtherUse* in the CGI reporting, the network can judge whether the concerned cell is an NPN-only cell. However, according to the according to the NPN discussion as belowRAN2 #108 Agreements:1. Access attempts by Rel-15 UEs for emergency services on CAG cell could be allowed based on operator's preference
2. cellReservedForOtherUse is used to prevent Rel-15 UEs to access the cell.

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| NOTE: A non-CAG-capable UE (e.g. Rel-15 UE) considers a CAG-only cell as acceptable cell if the cell is not barred to Rel-15 UEs, and if a PLMN ID without CAG list is broadcast and that PLMN is forbidden (e.g. by use of a PLMN ID for which all registration attempts are rejected such that the PLMN ID becomes forbidden). |

from the network side, the network can also set the cellReservedForOtherUse to false for a “NPN-only cel”( A cell that is only available for normal service for NPNs' subscriber) to allow emergency services for the UE that doesn’t support NPN feature. Thus, from network side it’s inexact to judge whether the concerned cell is an “NPN-only cell” based on the reported cellReservedForOtherUse.Then back to the issue above (highlighted in green) , we think some solutions from the network side shall be considered. Just as noted in the 38300, the network would set a “forbidden PLMN” to the legacy PLMN filed for the NPN-only cell. This forbidden PLMN can be set to the PLMNs that would not be used by any neighboring cells, then by the network side, once the UE report such kind of PLMNs, the network would ignore it and further check the PLMN in the NPN-List to determine whether it only supports NPN.  |
| Qualcomm Incorporated | Agree |  |
| CATT | Agree |  |
| LGE | Agree | We think existing capability can be extended, i.e., UE supporting nr-CGI-Reporting-NPN should support reporting of cellReservedForOtherUse. Regarding the problem mentioned by Huawei comment, we are not sure if there are already UEs that already implemented nr-CGI-Reporting-NPN in the field.  |
| Nokia | Agree |  |
| vivo | Agree |  |
| Apple | Partly Agere | We share Huawei’s comment that Option A in 6281 is a better way to go, |

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| --- | --- | --- | --- |
|  | Agree | Disagree | Neutral/Unclear |
| Stats | 7 | 3 | 1 |
| Moderator observations: * Majority of the companies think that UE supporting nr-CGI-Reporting-NPN can report the cellReservedForOtherUse IE as part of CGI reporting procedure if the concerned cell is NPN-only cell
* The main open issue that needs further discussion is whether this needs a new UE capability or do we rely on the exisiting capability of nr-CGI-Reporting-NPN
* There will be an ambiguity at the network if no capability is introduced, however, it seems companies are hinting that there are no implantations today for this. So, at least some companies seem to think we don’t need a new capability

Proposal 10: UE supporting nr-CGI-Reporting-NPN/New-Capability reports the cellReservedForOtherUse IE as part of CGI reporting procedure if the concerned cell is NPN-only cell Note: Options to discuss in phase-2 (as in Proposal 11) are whether we rely on nr-CGI-Reporting-NPN or do we introduce new capability.  |

Then, to solve the above issue, in R2-2105421, it suggested that RAN2 should discuss whether additional capability bit is needed or not, and two solutions from the UE capability perspective are proposed in R2-2106281:

Solution A:

- Introduce a new UE capability that indicates that the UE supports to report the cellReservedForOtherUse.

- UE with this new capability reports the cellReservedForOtherUse in CGI reporting procedure.

Solution B:

- Introduce a new UE capability that indicates that the UE supports not to report the plmn-IdentityInfoList in case of NPN-only cell.

- UE with this new capability does not report the plmn-IdentityInfoList in case of NPN-only cell in CGI reporting procedure.

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| Q 11: Do companies agree with the above solutions, if so, which one?  |
| Company | Solution A / Solution B /None (no changes) | Comments if any |
| Ericsson | None | Reporting *cellReservedForOtherUse* should be mandatory for UEs supporting nr-CGI-Reporting-NPN, i.e. there is no need for a separate capability. |
| MediaTek | Solution A | We think that it is not necessary to bind reporting of *cellReservedForOtherUse* to NPN functionality. This flag could be used for other feature if necessary in the future. A separate capability is a clean solution. If necessary, we could make this capability conditional mandatory if the UE support *nr-CGI-Reporting-NPN*. |
| Huawei, HiSilicon(Proponent) | Solution A preferable;Solution B, acceptable. | Based on our comments to Q10, we prefer Solution A as a comparatively thorough solution. It is also OK for us to go with solution B, if this is the majority’s preference. We care more about solving the issue itself than which specific solution to be adopted. |
| Lenovo | None | We prefer to extend the existing capability nr-CGI-Reporting-NPN for reporting the cellReservedForOtherUse IE. |
| ZTE | None (no changes) | As answered in Q10, we think some solutions from the network side shall be considered. Just as noted in the 38300, the network would set a “forbidden PLMN” to the legacy PLMN filed for the NPN-only cell. This forbidden PLMN can be set to the PLMNs that would not be used by any neighboring cells, then by the network side, once the UE report such kind of PLMNs, the network would ignore it and further check the PLMN in the NPN-List to determine whether it only supports NPN. Anyway, we think this issue can be solved by network deployment, no enhancement/change are needed |
| Qualcomm Incorporated | Solution A | In line with the solution in 5421, which we support. |
| CATT | Solution B | Slightly prefer solution B which is simpler. |
| LG | Solution A, but | We think no separate capability bit is needed. Reporting *cellReservedForOtherUse* should be mandatory for UEs supporting nr-CGI-Reporting-NPN. |
| Nokia | Solution A is preferred, but Solution B is also acceptable. |  |
| vivo | Solution A | Solution A is straight-forward. |
| Apple | Solution A |  |

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|  | Solution A | Solution B | No changes / Solution A with no new capability |
| Stats | 6 | 1 | 4 |
| Moderator observations: * Seems there is a split view between solution A (with capability) and making this conditionally mandatory (for UE supporting nr-CGI-Reporting-NPN).
* The main question is whether there are current implementations. Perhaps we can discuss this in phase-2

Proposal 11: For P10, discuss whether we need a new capability or can we rely on nr-CGI-Reporting-NPN?  |

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| Q 12: Assuming we go ahead with the change, do companies have any comments to the actual changes proposed in R2-2105421 and/or R2-2106281?  |
| Company | Detailed comments on changes proposed in R2-2105421 and/or R2-2106281 |
| MediaTek | Regrading to the solution A in R2-2106281, the following if-else structure may have to change further. The last else if (no SIB1) should started first and all the other level 4> bullets should be inside the else part of no SIB1. This seems to be a bug while introducing *nr-CGI-Reporting-NPN*. 4> if *plmn-IdentityInfoList* of the *cgi-Info* for the concerned cell has been obtained:5> include the *plmn-IdentityInfoList* including *plmn-IdentityList*, *trackingAreaCode* (if available), *ranac* (if available), *cellIdentity* and *cellReservedForOperatorUse* for each entry of the *plmn-IdentityInfoList*;5> include *frequencyBandList* if available;4> if *nr-CGI-Reporting-NPN* is supported by the UE and *npn-IdentityInfoList* of the *cgi-Info* for the concerned cell has been obtained:5> include the *npn-IdentityInfoList* including *npn-IdentityList*, *trackingAreaCode*, *ranac* (if available), *cellIdentity* and *cellReservedForOperatorUse* for each entry of the *npn-IdentityInfoList*;4> if *nr-CGI-Reporting-ForOtherUse* is supported by the UE and *cellReservedForOtherUse* of the *cgi-Info* for the concerned cell has been obtained:5> include *cellReservedForOtherUse* if available;4> else if *MIB* indicates the *SIB1* is not broadcast:5> include the *noSIB1* including the *ssb-SubcarrierOffset* and *pdcch-ConfigSIB1* obtained from *MIB* of the concerned cell;The proposed Pseudo code belowIF MIB indicates no SIB{ Include no SIB1}else{ If PLMN available 🡪 Include the *plmn-IdentityInfoList* If npn-IdentityInfoList available and UE supports 🡪 include this field If *nr-CGI-Reporting-ForOtherUse* available and UE supports 🡪 include this filed}  |
| Huawei, HiSilicon | For Solutions B, we’d like to make some small adjustments as follows to our draft CR proposed in R2-2106281. The changed part intends to describe the case that the cell is NOT an NPN-only cell. |
| Nokia | In both solution the new capability shall be supported when ***nr-CGI-Reporting-NPN-r16*** is supported, i.e. the last sentence of the definition in 38.306 CR should be:If UE supports ***nr-CGI-Reporting-NPN-r16***, UE shall report this capability |
| Proposal 12: Take into account above comments during phase-2.  |

# posSI scheduling Correction

In R2-2105964, the issue with SI start offset requirements are discussed and in R2-2105965 it is proposed to add a new field to provide the configurable start position of the SI and update the SI acquisition procedure to take the field into account while calculating the offset.

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| Q 13: Do companies agree with the changes proposed in R2-2105965? |
| Company | Agree/Disagree | Comments if any |
| Huawei, HiSilicon | Disagree | The proposed changes are non-backwards compatible and are not correction, but rather an optimization targeted at some specific configuration. Since the issue can be avoided by using another network configuration, we do not think it is acceptable to introduce an NBC change, especially at this stage. We can discuss whether introducing more flexibility for SI scheduling is beneficial in future. |
| MediaTek | Disagree | The proposed change a huge NBC and impact other R16 features that introduced new SIB (e.g. DCCA, NPN, V2X). It is not preferred to have this kind of change at this stage. Regarding to the issue, it could be solved by mapping multiple posSIB (which is small) to single SI message. So, the motivation is not so strong in our view. We do agree the proposed method provide better scheduling flexibility, but it is too late to have this kind of fundamental change. |
| Ericsson | Agree | For Positioning, the current solution has an error; it uses a hardcoded parameter of 80ms which was copied from LTE. In LTE, SIB1 was transmitted with 80ms periodicity; however, in NR; the shortest periodicity can also be 160ms or higher.3> determine the number *m* which corresponds to the number of SI messages with an associated *si-Periodicity* of 8 radio frames (80 ms), configured by *schedulingInfoList* in *SIB1*;Hence, this needs to be corrected. One way is to correct by replacing 80ms with shortest periodicity 3> determine the number *m* which corresponds to the number of SI messages with an associated *si-Periodicity* with shortest *si-Periodicity*, configured by *schedulingInfoList* in SIB1;As explained in the discussion paper R2-2105964; this correction can help but as we need to anyway need to do the correction so why not have a solution which is more future proof. So, if in future more positioning SIs or NR SIs are added; NW can provide an explicit start position.To answer to MTK; there are nearly 40 posSIBs and the number will further increase. Some of the posSIBs are huge up to 8000 bits that they need to be segmented. Thus, it is not possible always to squeeze multiple SIBs to SI but in fact a SIB needs to be segmented.To answer to Huawei: At least for positioning, we need to do the correction of replacing the hardcoded with shortest Periodicity. |
| Lenovo | Open | If the current Positioning SI message scheduling has limitations, then we are open to fix them. Otherwise there is risk that the entire feature may not work. But the details on the changes in procedure text and ASN.1 need to be carefully checked. |
| Qualcomm Incorporated | Disagree | Major change in SI scheduling scheme at this stage is not acceptable. We could accept some small change in positioning SI scheduling as follows.5.2.2.3.2              Acquisition of an SI message[…]2> else if the concerned SI message is configured by the *posSchedulingInfoList* and *offsetToSI-Used* is configured:3> determine the number *m* which corresponds to the number of SI messages with ~~an associated~~ the shortest *si-Periodicity* ~~of 8 radio frames (80 ms),~~ configured by *schedulingInfoList* in *SIB1*;3> for the concerned SI message, determine the number *n* which corresponds to the order of entry in the list of SI messages configured by *posSchedulingInfoList* in *SIB1*;3> determine the integer value *x* = *m* *× w +* (*n* – 1*)* *× w*, where *w* is the *si-WindowLength*3> the SI-window starts at the slot #*a*, where *a* = *x* mod N, in the radio frame for which SFN mod *T* = FLOOR(*x*/N) +8, where *T* is the *posSI-Periodicity* of the concerned SI message and N is the number of slots in a radio frame as specified in TS 38.213 [13]; |
| LG | Disagree, see comment | The proposed changes are substantial but it is still not clear to us if the existing SI scheduling indeed fails to schedule posSIBs properly and the positioning feature fails to work. So it is not clear if the proposed changes are essential corrections or just for optimization. We need more time to see the problem and the proposed changes in detail.  |
| CATT | Need further discussion | According to field description in 38.331 below, if *offsetToSI-Used* is configured, the shortest si-Periodicity is 80ms. *offsetToSI-Used* may be present only if the shortest configured SI message periodicity for SI messages in *schedulingInfoList* is 80ms.So we wonder the motivation to replace 80ms with shortest periodicity.And we share the same view that the CR is not a correction, but an enhancement. Hence, if there is a problem considering the large size of posSIBs, enhancement in positioning, not a correction, can be considered. |
| ZTE | Disagree | We share the similar view with Huawei and MediaTek. This is more an enhancement than a correction. Considering this change will NBC and impact other Rel-16 features, we think it is too late to make the modification at current stage in Rel-16. |
| Nokia | Disagree | We think this is a late enhancement for Rel-16 and not a correction. Any SI scheduling enhancement must be generic to any SI messages and not something specific to positioning SI messages. However, it is also too late now to change the SI window determination algorithm in NR. The solution to use an 80ms offset for scheduling positioning SI messages was introduced by Ericsson and it was viewed as sufficient to address the scheduling of positioning SI message along with other non-positioning SI messages that may have different range of periodicities. We are not sure about the co-existence of this enhanced solution with the current scheduling mechanism already in place. Proposal 2 in the paper which says “Note that this addition is non-backwards-compatible and affects all UEs and networks implementing the broadcast of positioning SIBs defined in Rel-16” is a concern for us. |
| vivo | Disagree | Share the same view with above, the NBC changes should not be introduced at this stage. |
| CMCC | Open | We see the flexibility brought by the enhancement solution from Ericsson. Considering the large size of posSIBs, if this issue impacts the positioning feature, we are fine to discuss the details of the proposed solution.  |
| Apple | Disagree | We also feel this is an enhancement and would cause NBC issue to the very basic SI window design. It might be OK to correct the problem as proposed by Qualcomm which could be FFS. |

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| --- | --- | --- | --- |
|  | Agree | Disagree | Neutral/Comments/open |
| Stats | 1 | 8 | 3 |
| Moderator observations: * Not enough support to pursue this change in R16

Proposal 13: The changes proposed in R2-2105965 are not pursued |

# Introduction of ssb-PositionQCL-Common and ssb-PositionQCL in inter-node messages

In R2-2105394, the following proposals are made:

**Proposal 1: RAN2 is kindly asked to introduce ssb-PositionQCL-Common in MeasTiming in MeasurementTimingConfiguration.**

• It is conditionally present, in the same way as the ssb-PositionQCL-Common in SIB2, SIB4 and MeasObjectNR.

• The TP in the Appendix can be considered.

**Proposal 2: RAN2 is kindly asked to send LS to RAN3 for updating description of ssb-PositionsInBurst (SSB Positions In Burst) and introducing ssb-PositionQCL in“Served Cell Information NR”, “Served NR Cell Information” and “Served Cell Information”.**

• The description of “SSB Positions In Burst” (ssb-PositionsInBurst) should be updated to be aligned with ssb-PositionsInBurst in ServingCellConfigCommon in Rel-16 TS 38.331.

• ssb-PositionQCL is conditionally present, in the same way as the ssb-PositionQCL in ServingCellConfigCommon.

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| Q 14: Do companies agree to introduce ssb-PositionQCL-Common in MeasTiming in MeasurementTimingConfiguration and if yes, do you agree that it should be conditionally present (similar to ssb-PositionQCL-Common in SIB2, SIB4 and MeasObjectNR)? |
| Company | Agree/Disagree | Comments if any |
| Ericsson | Disagree | The neighbour node would normally have the same value configured for the same frequency. Also, such configuration is anyhow done via O&M, so no X2/Xn update is needed. |
| Huawei, HiSilicon | No strong view | Agree with Ericsson on the same value configured by the neighbouring nodes.  |
| Fujitsu | Agree | Proponent. Regarding whether different nodes may have different values, in measurement configuration of NR-U, beside ssb-PositionQCL-Common, we support configuration of ssb-PositionQCL which is cell-specific. It means that even for the same frequency, different cells/nodes can configure different value of ssb-PositionQCL/ssb-PositionQCL-Common.In addition, the MeasTiming in MeasurementTimingConfiguration includes ssb-ToMeasure, which would be uninterpretable without ssb-PositionQCL-Common for NR-U according to the description of SSB-ToMeasure. Indication of ssb-ToMeasure is based on one-to-one mapping between the bitmap and SSB index, while the SSB index is determined according to ssb-PositionQCL-Common.Considering the above, it is necessary to introduce ssb-PositionQCL-Common in MeasTiming in MeasurementTimingConfiguration to support measurement configuration for NR-U.  |
| Qualcomm Incorporated | Agree |  |
| ZTE | Agree |  |
| Nokia | Maybe | We think OAM could also work but we are also fine for inter-node message if this has any per UE basis. |
| Apple | No strong view | If network vendors feel OAM can handle this, it should be fine without introducing it into Xn interface. |

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| --- | --- | --- | --- |
|  | Agree | Disagree | Neutral/Comments |
| Stats | 3 | 2 | 3 |
| Moderator observations: * Fairly split views
* Network vendors seem to think this can be left to implementation

Proposal 14: The changes proposed in R2-2105394 are not pursued |

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| Q 15: Based on the above is an LS to RAN3 needed? |
| Company | LS needed /LS not needed | Comments if any (e.g. on the detailed contents of such LS) |
| Ericsson | LS not needed |  |
| Huawei, HiSilicon | Not needed |  |
| Fujitsu | Agree | Proponent. Please note that there are two points. One is to update the description of “SSB Positions In Burst” (ssb-PositionsInBurst) to be aligned with ssb-PositionsInBurst in ServingCellConfigCommon in Rel-16 TS 38.331. Another is to introduce ssb-PositionQCL in “Served Cell Information NR”, “Served NR Cell Information” and “Served Cell Information”, rather than introducing ssb-PositionQCL-Common in MeasTiming in MeasurementTimingConfiguration.For the later point, one motivation is similar to what we clarified for Q 14. It is to support measurement configuration for NR-U, which includes configuration of ssb-PositionQCL.Additionally, “Served Cell Information NR”, “Served NR Cell Information” and “Served Cell Information” include “SSB Positions In Burst” (ssb-PositionsInBurst), which would be uninterpretable without ssb-PositionQCL for NR-U. Indication of ssb-PositionsInBurst is based on one-to-one mapping between the bitmap and SSB index, while the SSB index is determined according to ssb-PositionQCL. |
| Qualcomm Incorporated | No strong view |  |
| ZTE | No strong view |  |
| Nokia | No strong view |  |
| Apple | No strong view |  |

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| --- | --- | --- | --- |
|  | Agree | Disagree | Neutral/Comments |
| Stats | 1 | 2 | 3 |
| Moderator observations: * Depends on P14. Seems no need for an LS.

Proposal 15: No need for an LS to RAN3 (based on Proposal 14). |

# Conclusions and proposals Phase-1

**Note: Proponents of the highlighted proposals below are requested to submit updated drafts in the “CRs folder” so that these can be reviewed in phase-2**

**Proposal 1: Changes proposed in R2-2105516 are not pursued**

**Proposal 2: Update the CR R2-2105179 to take into consideration the comments made (see input from Huawei) and review in phase-2**

**Proposal 3: Agree the CR in R2-2104920**

**Proposal 4: For the CR in R2-2105925: Provide R15 draft per the comment above (to be reviewed in phase-2) and can merge both R15 and R16 CRs into rapporteur CR eventually (if agreeable) after phase-2**

**Proposal 5: Agree and merge the contents of R2-2105926 into rapporteur CR.**

**Proposal 6: For R2-2105896 and R2-2105186, pursue a backwards compatible CR to align RAN2 specs with RAN1 intention to have up to 16 elements for switching trigger**

**Proposal 7: Proponents of R2-2105896 should compile a BC CR and also create a corresponding UE Capability CR and these will be reviewed in phase-2 (please take the comments below for Q8 into account)**

**Note: For P7, take the comments from Q8 into account and create updated CRs (for RRC and capability CR).**

**Observation 9: UE not supporting nr-CGI-Reporting-NPN shall report the obtained PLMN-IdentityInfoList IE from the indicated NR cell as part of CGI reporting procedure irrespective of the value of cellReservedForOtherUse IE**

**Proposal 10: UE supporting nr-CGI-Reporting-NPN / New-Capability (FFS phase-2) reports the cellReservedForOtherUse IE as part of CGI reporting procedure if the concerned cell is NPN-only cell Note: Options to discuss in phase-2 (as in Proposal 11) are whether we rely on nr-CGI-Reporting-NPN or do we introduce new capability**

**– create CRs accordingly (take into account comments from Q12 and outcome of P11 from Phase-2. For the CR review, perhaps we can start with the simpler version of reusing nr-CGI-Reporting-NPN capability – i.e. no new capability as the starting point)**

**Proposal 11: For P10, discuss whether we need a new capability or can we rely on nr-CGI-Reporting-NPN?**

**Proposal 13: The changes proposed in R2-2105965 are not pursued**

**Proposal 14: The changes proposed in R2-2105394 are not pursued (and no need for any LS to RAN3 hence)**

# References

1. R2-2105516 Correction on T310 and T312 ITRI CR Rel-16 38.331 16.4.1 2630 - F NR\_newRAT-Core
2. R2-2105179 Miscellaneous Corrections to the SNPN ZTE Corporation, Sanechips, Samsung CR Rel-16 38.331 16.4.1 2605 - F NG\_RAN\_PRN-Core
3. R2-2104920 Correction on reportSlotOffsetList Qualcomm Incorporated CR Rel-16 38.331 16.4.1 2590 - F NR\_L1enh\_URLLC-Core
4. R2-2105925 Correction on description of msg1-SubcarrierSpacing in RACH-ConfigCommon ZTE Corporation, Sanechips CR Rel-16 38.331 16.4.1 2652 - F NR\_unlic-Core
5. R2-2105926 Correction on description of ssb-PositionsInBurst in ServingCellConfigCommon ZTE Corporation, Sanechips CR Rel-16 38.331 16.4.1 2653 - F NR\_unlic-Core
6. R2-2105896 Extending number of cells for search space switching trigger configuration Ericsson discussion NR\_unlic-Core
7. R2-2105186 Correction on switchTriggerToAddModList-r16 and switchTriggerToReleaseList-r16 Huawei, HiSilicon CR Rel-16 38.331 16.4.1 2607 - F NR\_unlic-Core
8. R2-2105421 Discussion on CGI reporting for NPN-only cell Samsung Electronics Co., Ltd discussion NG\_RAN\_PRN-Core
9. R2-2106281 Discussion on CGI report for NPN-only cell Huawei, CMCC, China Telecom, HiSilicon discussion Rel-16
10. R2-2105964 Discussion on SI start offset requirements Ericsson, Verizon discussion Rel-16 38.331 NR\_pos-Core
11. R2-2105965 Correction of SI Scheduling Ericsson, Verizon CR Rel-16 38.331 16.4.1 2658 - F NR\_pos-Core
12. R2-2105394 Introduction of ssb-PositionQCL-Common and ssb-PositionQCL in inter-node messages Fujitsu discussion Rel-16 NR\_unlic-Core