**3GPP TSG-RAN WG2 Meeting #113 Electronic R2-2102011**

**25 January – 05 February 2021**

**Agenda item: 6.12**

**Source: Nokia**

**Title: Summary of [AT113-e][101][PRN] Corrections**

**WID/SID: NG\_RAN\_PRN-Core - Release 16**

**Document for: Decision**

# 1 Introduction

This document is the summary of the following email discussion:

* [AT113-e][101][PRN] Corrections (Nokia)

Scope: Discuss the PRN corrections in 6.12

Initial intended outcome: summary of the offline discussion with e.g.:

* + - List of CRs that can be agreed as is
    - List of CRs that can be agreed with some changes / merges with other CRs (with an indication of the needed changes)
    - List of CRs that require online discussion
    - List of CRs that should not be pursued

Initial deadline (for companies' feedback): Tuesday 2021-01-26 15:00 UTC

Initial deadline (for rapporteur's summary in R2-2102011): Tuesday 2021-01-26 16:00 UTC CRs listed as "can be agreed as is" in R2-2102011 and not challenged until Wednesday 2021-01-27 04:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

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# 2 Discussion

## 2.1 UAC parameter selection

The following papers were submitted on UAC parameter selection

[R2-2100485](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2100485.zip) UAC parameter selection for NPN Ericsson

[Observation 1 UAC parameter selection based on UE implementation leads to unpredictable behaviour and is therefore not preferred.](file:///C:\Users\wolfner\AppData\Local\Temp\7zO030CD691\R2-2100485%20-%20UAC%20parameter%20selection%20for%20NPN.docx#_Toc61550463)

[Observation 2 UE shall not perform UAC check more than once.](file:///C:\Users\wolfner\AppData\Local\Temp\7zO030CD691\R2-2100485%20-%20UAC%20parameter%20selection%20for%20NPN.docx#_Toc61550464)

[Observation 3 A UE which is allowed to access a PLMN both as a PLMN-only UE (through a PLMN) or as an NPN-capable UE (NPN+CAG), could select UAC parameters that are most promising to get access.](file:///C:\Users\wolfner\AppData\Local\Temp\7zO030CD691\R2-2100485%20-%20UAC%20parameter%20selection%20for%20NPN.docx#_Toc61550465)

[Proposal 1 Selecting most promising UAC parameters for UE’s that can access both as an NPN or a PLMN (only) UE, should not impact procedures related to reception of SIB1.](file:///C:\Users\wolfner\AppData\Local\Temp\7zO030CD691\R2-2100485%20-%20UAC%20parameter%20selection%20for%20NPN.docx#_Toc61550467)

[Proposal 2 For the situation that UAC parameters are different for a PLMN and PLMN+CAG entry in the network lists in SIB1, UE maintains the cellIdentity and TAC that was communicated to upper layers in connection to reception of SIB1, irrespective of if access control is performed with UAC parameters that are associated to other cell Identity and TAC for the same PLMN.](file:///C:\Users\wolfner\AppData\Local\Temp\7zO030CD691\R2-2100485%20-%20UAC%20parameter%20selection%20for%20NPN.docx#_Toc61550468)

[Proposal 3 Adopt the text proposal above.](file:///C:\Users\wolfner\AppData\Local\Temp\7zO030CD691\R2-2100485%20-%20UAC%20parameter%20selection%20for%20NPN.docx#_Toc61550469)

[R2-2101557](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101557.zip) CR on the Parameters Selection ZTE Corporation, Sanechips

1. Clarify that when the UE is allowed to access both the legacy PLMN and the NPN (PLMN+CAG), and the UAC configuration on the PLMN and NPN are different, the UE shall be able to pick either the PLMN or the NPN. And more specifically, do so when the UE is:

* receiving SIB1,
* receiving the RRCSetup message,
* receiving the RRCResume message,
* UAC check

1. Some other editorial issues

[R2-2101715](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101715.zip) UAC parameter selection in case of UE allowed both on PLMN and CAG Qualcomm Incorporated

Clarify that the UE can choose to follow the UAC of the PLMN or the CAG, in case it is allowed to access both.

**Rapporteur's Comment:** These papers are addressing the same issue that was left open at the previous meeting, therefore one of them should be selected.

**Q1: Which paper(s) should be used as a baseline for UAC parameter selection when a UE can select a cell both as a PLMN cell and as a CAG cell:**

1. **R2-2100485**
2. **R2-2101557**
3. **R2-2101715**

**In the comment field please indicate if you request some changes (including merging) in the preferred paper(s). More than one paper can be indicated in the answer more than one paper are acceptable.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Answer** | **Comment (e.g. requested modifications for the preferred solutions)** |
| ZTE | B (proponent) |  |
| Intel | A | Prefer that the UE behavior is predictable |
| CATT | A | We should stick to agreement in RAN2#112e, but it seems b) and c) is violating CR R2-2011162 which is agreed,  //CR R2-2011162,  Clarify that if the UE has the opportunity to associate itself with a (normal) PLMN and with a PLMN+CAG combination, then the UE shall associate itself with the PLMN+CAG combination. |
| Samsung | A or C | We are basically fine with either option A or option C. |
| Huawei, HiSilicon | B | The wording "is less or equally favorable" in A is ambiguous.  Both B and C are leaving the UAC selection to UE implementation. But compared with adding a note (C), we think modifying the procedure text (B) is a better way. |
| Qualcomm | C (not okay with A) | Option a makes the UE behavior mandatory, though the term “more favorable” is not clearly defined. It is undesirable to have mandatory behavior that is not well defined.  Options b and c leave it to UE implementation, which is consistent with the decision in R2#112e. In terms of style, we prefer (c) as we proposed it, though |
| Nokia | **B** (preferred)  **A** (acceptable) | **R2-2101557 (option b) is preferred: OK as it is**  **R2-2100485 (option a) is acceptable:** 1) Unclear what is "more favorable": some clarification should be added to the CR 2) Drawback of the proposal is that UE behavior may not be fully consistent: selected UAC parameters may be belong to a different logical cell than the selected logical cell  **R2-2101715 (option c)** Our understanding is that in principle it is similar to Option b), but we think that option b) contains a cleaner description |
| Apple | B or C (not okay with A) | Option A proposes a “mandatory” UE behavior though the procedure so far has been UE implementation. We prefer options B or C which continue to leave the behavior to UE implementation. |
| Ericsson | A, with clarification | We have the same understanding as CATT, and that agreed CR from R2-112e were in line with that we should not leave the behavior up to UE implementation.  We agree with the Qualcomm comment to A that mandatory behavior should be well-defined. We prefer to, instead of saying “more favorable”, specifically state ***uac-BarringFactor*** |
| vivo | B | Our understanding is that it will go against the intention of load control at NW side if UE which selects CAG access performs access baring check with UAC parameters of a PLMN. So, we prefer that UE performs access barring check with the UAC parameters corresponding to the network access type which UE selects.  Option B can be taken as baseline to further discuss. |
| LG | C or B | We think the selection can be left to UE implementation, because, if so, the UE eligible for both PLMN and PNI-NPN will most likely choose favorable UAC parameters. We think adding a Note is sufficient, i.e., prefer C to B. |

**Summary:**

**Rapporteur's Proposal:**

## 2.2 SIB validity check

The following CR was submitted on SIB validity check:

[R2-2101654](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101654.zip) Correction on SIB validity check Google Inc

When camps on an PNI-NPN cell, the NPN capable UE also use the npn-Identity to do the SIB validity checking.

**Q2: Do you agree that the changes in R2-2101654 are needed? In the comment field please indicate if you request some changes in the CR.**

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| --- | --- | --- |
| **Company** | **Answer** | **Comment (e.g. requested modifications in the CR)** |
| ZTE | No | We understand the intention of this CR. For the case that the UE moves from a NPN-only cell to a PNI-NPN (share with a PLMN) cell, even the two cells share the same System Information, the UE still need to reacquire OSI. However, if adopted this CR, for the case that the UE ( which can access both PLMN and NPN) moves from a PLMN cell to a PNI-NPN (share with a PLMN) cell, the UE also still need to reacquire OSI even the two cells share the same System Information.  Thus, we tend to respect the previous agreements, that the first NPN ID is used for the SIB validity change for the NPN-only cell.  [R2-2001698](file:///C:\Data\3GPP\RAN2\Inbox\R2-2001698.zip)  1.1For NPN-only cells, the first NPN ID (PLMN ID and NID or PLMN ID and CAG ID) is used for the SIB validity check by NPN capable UEs |
| Intel | No | The current spec is the intended behavior as per agreement. |
| CATT | No | We think the below reason for the change is not valid.  “During the SIB validity check, the *npn-IdentityList* is only applicable for a UE camps on an NPN-only cell. This results a NPN capable UE camping on an PNI-NPN cell always considers stored SIBs are invalid after it acquires a SIB1.”  For a Non-NPN only cell(PLMN/NPN shared), UE uses the first PLMN-Identity in the PLMN-IdentityInfoList for validity check. If the first PLMN-Identity does not change (this should not happen frequently in the real deployment), UE has the opportunity to pass the validity check and use the stored SIB. |
| Samsung | No | We do not see any problem to check the first PLMN-Identity in the PLMN-IdentityInfoList for SIB validity check even for a shared cell. |
| Huawei, HiSilicon | No | The change is incorrect (not in line with previous agreements). The current text works well.  Agreements from RAN2 #109-e:  Agreements:   1. For cells shared between PLMNs and NPNs, non-NPN capable UEs use the first PLMN ID in the Rel-15 PLMN list for the SIB validity check. |
| Qualcomm | No | Agree with Huawei that this change goes against previous agreements. |
| Asia Pacific Telecom | No | Agree with Huawei. |
| Nokia | No | Our understanding is that a NPN-only cell also covers the PNI-NPN only cells, therefore we think that this change is not needed. |
| Apple | No | We believe the current specification captures the intended behavior and is sufficient. |
| Ericsson | No | The current spec is correct. |
| vivo | No | There is no need to do any change as the current text reflects the previous agreement. |
| LG | No |  |

**Summary:**

**Rapporteur's Proposal:**

## 2.3 Intra-frequency reselection

The following paper was submitted on SIB validity check Intra-frequency reselection:

[R2-2101704](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101704.zip) Discussion on intra-frequency reselection Huawei, HiSilicon

**Proposal 1: Clarify that** **when a cell operates in unlicensed spectrum, UE needs to check the registered/selected PLMN, or the registered/selected SNPN when determining whether intra-frequency reselection is allowed.**

**Q3: Do you agree with the proposal of R2-2101704? In the comment field please indicate if you request some changes in the draft CRs provided in the Annex.**

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| --- | --- | --- |
| **Company** | **Answer** | **Comment (e.g. requested modifications in the CRs)** |
| ZTE | FFS | We understand the intention of this CR, maybe selected SNPN is more accurate for that the selected SNPN can be the registered SNPN or the initial SNPN that UE has selected but not finish the initial registration. But we also think that even without this modification, no confusion caused. Thus for this issue, we can follow the majorities’ views |
| Intel | Yes | We are fine with the change (i.e. including selected PLMN and SNPN). |
| CATT | Yes, but | Agree to have this change, but it also impact “**selected PLMN**” which is not part of NPN WI, Should it also be changed here? |
| Samsung | Yes | Agree with the change, but we wonder whether we need to add 'NR\_unlic-Core' in the WI code as it also impacts NR-U |
| Huawei, HiSilicon | Yes | Proponent |
| Qualcomm | Yes | Looks like a good change (though the spec is not broken without the change either, as the meaning is implied anyway). |
| Asia Pacific Telecom | Yes | We support the proposed changes (selected PLMN/selected SNPN) to TS 38.331 & TS 38.304. |
| Nokia | No | This is not a PRN only issue. We think that without this changes the specification is clear. |
| Apple | Yes | We are ok with the change and as others have mentioned, there is nothing broken or a need for change is really necessary. |
| Ericsson | No | The current spec is correct. |
| vivo | Yes | It makes the spec more clearer. |
| LG | Yes | It seems that the relevant agreement for NR-U was mistakenly not implemented in the NR-U CR, accordingly, the selected SNPN was not implemented as well in NPN CR. So, we think the proposed changes are just to implement the missing agreements. Then, it seems proper to add the WI code for NR-U in the coversheet.. |

**Summary:**

**Rapporteur's Proposal:**

## 2.4 Inter-RAT cell selection triggered by SNPN selection

The following papers were submitted on Inter-RAT cell selection triggered by SNPN selection:

[R2-2101854](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101854.zip) Inter-RAT cell selection triggered by SNPN selection Asia Pacific Telecom, FGI

**For inter-RAT (from E-UTRA to NR) cell (re)selection triggered by SNPN selection request:**

**Proposal#1 RAN2 WG is suggested to add ‘SNPN selection’ in the E-UTRA protocols as one condition for UE to delete the stored priorities/deprioritisation request(s) provided by dedicated E-UTRA signalling.**

The corresponding changes of TS 36.304 can be found in R2-2101849.

**For T320 in NR protocols/E-UTRA protocols:**

**Proposal#2 Add ‘SNPN selection’ as the stop condition of T320 (NR protocols).**

The corresponding changes of TS 38.331 can be found in R2-2101852.

**Proposal#3 Add ‘SNPN selection ’as the stop condition of T320 (E-UTRA protocols).**

The corresponding changes of TS 36.331 can be found in R2-2101850.

**For T325 in E-UTRA protocols:**

**Proposal#4 Add ‘PLMN/SNPN selection’ as the stop condition of T325 (E-UTRA protocols).**

**Proposal#5 Further indicate ‘UE would store the *deprioritisationReq* until T325 expires or is stopped’ in E-UTRA protocols.**

The corresponding changes of TS 36.331 can be found in R2-2101850.

**For T325 in NR protocols:**

**Proposal#6 Add ‘PLMN/SNPN selection’ as the stop condition of T325 (NR protocols).**

**Proposal#7 Further indicate ‘UE shall store the *deprioritisationReq* until T325 expires or is stopped’ in NR protocols.**

The corresponding changes of TS 38.331 can be found in R2-2101852.

[R2-2101849](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101849.zip) Corrections for inter-RAT cell selection triggered by SNPN selection Asia Pacific Telecom, FGI

[R2-2101850](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101850.zip) Stop conditions of T320 & T325 in E-UTRA protocols Asia Pacific Telecom, FGI

[R2-2101852](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101852.zip) Stop conditions of T320 & T325 in NR protocols Asia Pacific Telecom, FGI

**Q4: Do you agree with the motivation of the proposals of R2-2101854 (i.e. in principle the CRs are acceptable)? In the comment field please indicate if you request some changes in the CRs (R2-2101849, R2-2101850, and R2-2101852).**

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| **Company** | **Answer** | **Comment (e.g. requested modifications in the CRs)** |
| ZTE |  | Our understanding is that this issue is caused by the SNPN operation mode and PLMN operation mode switching, we are not sure whether the UE would trigger a hard/soft power off/on procedure during these two modes switching (for that the UE need to read the corresponding USIM). If there is a hard/soft power off/on procedure, we think the whole RRC protocol/parameters/Timers including T320/T325 would be reset.  Anyway, the SNPN operation mode and PLMN operation mode switch was not specified in CT1, Ran2 may also not need to specify the details, it can be left to the UE implementation.  For the CR [R2-2101849](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101849.zip) and [R2-2101850](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101850.zip) we think the SNPN selection indication will not send to the AS layer of the LTE-mode.  For the CR [R2-2101852](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101852.zip), for the first Change of T320, we think it’s ok, but for the second change of T325, at least for the PLMN selection part, it’s better to discussed in the other agenda. |
| Lenovo | Partly | For LTE the CRs R2-2101849 and R2-2101850 are not needed. Reasons:   * Stopping T320, T325 upon SNPN selection may have negative impacts to LTE network if the UE comes back to LTE and the network still face RAN congestion. Therefore, we prefer the UE keeps running both timers upon SNPN selection. Anyway, the timers do not impact UE operation in SNPN.   For NR only part of the CR R2-2101852 is acceptable:   * The change for T320 to add “SNPN selection” as further stop condition is ok. * The changes to T325 are not ok as original intention of the feature was to never stop T325 and deleting the timer is not the same as stopping it. |
| Intel | See comments | For R2-2101849 and R2-2101850, NPN is not supported in EUTRA. So the switch from PLMN over LTE to SNPN in NR are not visible on the LTE side. In our view, this can be left to the UE implementation.  For R2-2101852, the first change looks ok but the second change should be discussed in the main session since the change involved not just SNPN. |
| CATT | No | SNPN selection is only supported on NR in Rel16, so the scenario “triggering SNPN selection on E-UTRA” is not in the scope of R16 NPN WI.  Hence, all the related CRs (R2-2101854, R2-2101849, R2-2101850, and R2-2101852) should not be pursued. |
| Samsung | See comments | 1/ Regarding R2-2101849 and R2-2101850, we share same views with others i.e. can be left to UE implementation.  2/ Regarding R2-210185, we are also OK for the first change but prefer to discuss the second change in the main session as others commented. |
| Huawei, HiSilicon | No | We are not sure whether there’s NAS signaling for SNPN selection when UE is camped on an E-UTRA cell, therefore not convinced by the motivation of the changes. |
| Qualcomm | No | Ok to leave this to UE implementation. Agree with others that LTE CRs are not needed. |
| Asia Pacific Telecom | Yes(Propoent) | 1. We understand other companies concern (e.g., whether a hard/soft power off/on procedure would be applied while the UE activates/de-activates SNPN access mode or whether SNPN access mode switch is visible to E-UTRA). However, please note, based on TS 23.501 (v16.7.0) subclause 5.30.2.3, there is one Note:   *‘NOTE 2: Details of activation and deactivation of SNPN access mode are up to UE*  *implementation.’*  So, based on the Note in TS 23.501, we could not rule out the possibility that a hard/soft power off/on procedure may not be applied for the activation/de-activation of SNPN access mode since it is UE implementation.   1. Moreover, it is possible that NAS layer may deliver a SNPN selection request to the AS layer directly, as the legacy PLMN selection request transmitted from the NAS layer to the AS layer, after SNPN access mode is activated in the NAS layer. In this scenario, the SNPN selection request may be still visible to E-UTRA (even E-UTRA does not support SNPN) and so inter-RAT cell (re)selection procedure from E-UTRA to NR would be triggered. 2. The job of RAN2 WG is to prevent the possibility that the UE would follow invalid frequency priority information/de-prioritization request (inherited from E-UTRA) no matter what implementation that the UE does in the upper layers. Otherwise, the frequency carrier misleading condition mentioned in the proposed document may happen. 3. The RAN congestion control issue in E-UTRA could be solved by system information delivery (e.g., SIB1/SIB5) while the UE does not have stored frequency priorities from dedicated signalings. 4. The proposed change about T320 stop condition in R2-2101852 (to add “SNPN selection” as further stop condition) is simpler since only NR-RAT is involved and so we just suggest RAN2 WG to align the UE implementation for PLMN selection request reception & SNPN selection request reception in the AS layer. 5. To the proposed changes about T325 in R2-2101852, we are fine with further discussion in the main session since it may influence both PLMN selection/SNPN selection scenario. However, please also note the frequency carrier misleading condition (in NR protocols) may still happen if this issue is not well-addressed. |
| Nokia | No | Our view is when a UE switches between PLMN AM and SNPN AM, the UE should detach/deregister from the serving network as it cannot use that network anymore. The details of switching can be left for UE implementation (as in other specifications). |
| Apple | Partly Agree | The proposal expects that the NAS layer provides NPN successful acquisition to EUTRA RRC and RRC shall act on that information about ***deprioritisationReq*** and Timers adding to unnecessary additional complexity. So R2-2101849 and R2-2101850 can be left up to UE implementation. We agree with Lenovo and Intel that the changes to T325 need to be discussed further. |
| Ericsson | No (see comment) | Our interpretation of the CR’s is that they introduce stop-criteria for T325 that are not only associated to NPN, i.e., they change legacy functionality.  We propose that CR’s are addressed first in a general perspective to assess if a PLMN selection should trigger stop of T325? Note that 7.1.1 is informative only, so normative procedure text should then also reflect when to stop T325. This is missing in CR’s. When being addressed, we are fine with that any update includes SNPN also, in addition to PLMN.  We are OK with proposed changes for T320. |
| vivo | No | SNPN is NR feature, which should avoid the impacts on LTE spec. Agree with other companies that the LTE CRs are not needed. |
| LG | Partly | In our view, only the changes on T320 in NR CR R2-2101852 is something to consider not for the reason that the CR is meant to claim but for the reason that the same already applies to PLMN selection case.  The changes on T325 in part of NR CR R2-2101852 is not acceptable proper since we think T325 was not designed to stop. We do not think any changes on LTR spec are necessary because we cannot assume that LTE stack is necessarily aware of SNPN selection. Even in case LTE stack is aware of triggering of SNPN selection, we do not think T320 and T325 should necessarily stop. |

**Summary:**

**Rapporteur's Proposal:**

# 3 Conclusions

## 3.1 CRs that can be agreed as is

## 3.2 CRs that can be agreed with some changes / merges with other CRs

## 3.3 CRs that require online discussion

## 3.4 CRs that should not be pursued