**3GPP TSG-RAN WG2 Meeting #110e R2-20xxxxx**

**Elbonia, 01 – 11 June 2020**

**Agenda item: 6.18.2**

**Source: Nokia (Rapporteur)**

**Title: Report from email discussion [Post109bis-e][934][PRN] Remaining open issues**

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

**Document for: Discussion and Decision**

# 1 Introduction

This document is the report about the following email discussion

* [Post109bis-e][934][PRN] Remaining Open Issues (Nokia)

Scope: Discuss and resolve the remaining PRN open issues.

 Intended outcome: Report, possibly TP

      Deadline: Wednesday May 20th 23.59 PST

# 2 Discussion of the open issues

## 2.1 Issue 1: Role of manually selected CAG ID

**Open issue description:** What is the role of the manually selected CAG ID; only used during initial cell selection or it is used later during cell reselection and connected mode mobility.

* FFS if the UE shall prioritize it during cell reselection
* FFS if it has a role in Connected mode mobility
* FFS if the UE should send it during Resume procedure

In clause 4.5 of 38.304: FFS whether the above needs to be updated to consider manually selected CAG ID.

An LS in [R2-2002417](http://3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109_e/Docs/R2-2002417.zip) was sent with the following questions:

* Question 1.1; TO: SA2; CC: CT1:
If a UE performs manual CAG selection and a successful registration, then whether the UE shall stay on cells supporting the manually selected CAG ID in RRC\_CONNECTED state especially in the case when after registration the Allowed CAG List in the UE does not contain the manually selected CAG ID?
* Question 1.2; TO: SA2; CC: CT1
Shall a UE prioritize for cell reselection the cells supporting the manually selected CAG ID over other suitable cells that do not support the manually selected CAG ID after a successful registration?
	+ CT1 answer in [C1-202846](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_123e/Docs/C1-202846.zip)/R2-200????: No
* Question 1.3; TO: CT1:
It is RAN2 understanding that the UE NAS provide the manually selected CAG ID to UE AS. Is the manually selected CAG ID provided as part of the allowed CAG list, or as a separate element?
	+ CT1 answer in [C1-202846](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_123e/Docs/C1-202846.zip)/R2-200????: Manually selected CAG ID will be provided as a separate element. Please find the attached CR with the solution. (C1-202912)

**Question 1a: Based on the received answers do you agree that the manually selected CAG ID has no impact to cell reselection?**

**Question 1b: Based on the received answers do you agree that the UE shall select a cell supporting the manually selected CAG ID provided by NAS for initial cell selection?**

|  |  |  |  |
| --- | --- | --- | --- |
| **Company** | **Answer to Q1a** | **Answer to Q1b** | **Comment** |
| Qualcomm | Yes | Yes |  |
| Nokia | Yes | Yes |  |
| Vodafone | Yes | Yes  |  |
| Ericsson | Yes | See comment | We believe the responses point in the direction indicated by Q1a/b. However, we don’t see the reason why the UE shall select a cell supporting a manually selected CAG ID. It would be good if this can be better explained, as it may create situations when UE is forced to select a bad cell to access a PLMN, when it equally well could have selected a good cell. Note that a CAG ID is an access parameter, not a network ID. |
| Futurewei | Yes | Yes |  |
| CATT | ? | ? | Question 1.2 was send to SA2 and CC to CT1,we have not received answer from SA2 yet. Shall we make a decision based on CT1’s response now?We are OK to follow if the majority view is to conclude it based on CT1’s response. Then we understand that there is no priority between manually selected CAG ID and allowed CAG list based on CT1 response. In that case we think allowed CAG list will be sufficient for AS, there will be no any particular behaviour in AS for manually selected CAG ID. Therefore we are confused by the response from CT1 on Question 1.3. We are wondering the necessity of providing manually selected CAG ID AS as a separate element. |
| Huawei | Yes | Yes |  |
| ZTE | - | - | Agree with CATT that we can wait for more input from SA2 before reaching conclusions in RAN2. |
| Intel | Yes and No | Yes | For Q1a, as per CT1 response, there is no priority between selected CAG ID from manual CAG selection and allowed CAG list provided by NAS for cell reselection. However, the selected CAG ID will still impact the suitability check during cell reselection. Some updates are needed on the definition of the suitable cell in TS38.304. |
| Lenovo | Yes | Yes | To Q1a: We understand that after successful registration the manually selected CAG-ID will be included in UE’s Allowed CAG list. So, it will be then used for cell reselection like the other CAG-IDs in the Allowed CAG list.To Q1b: as specified in 38.304, subclause 5.1.1.2 the UE shall search for an acceptable or suitable cell belonging to the selected CAG to camp on. |

## 2.2 Issue 2: Selected PLMN-Identity in *RRCResumeComplete*

**Open issue description:** Whether the selected PLMN-Identity can refer to a NPN in the description of *RRCResumeComplete* messages and the relevant procedures

According to clause 5.3.13.4 the selected PLMN-Identity may be added into *RRCResumeComplete*

1> set the content of the of *RRCResumeComplete* message as follows:

2> if the upper layer provides NAS PDU, set the *dedicatedNAS-Message* to include the information received from upper layers;

2> if the upper layer provides a PLMN, set the *selectedPLMN-Identity* to PLMN selected by upper layers (TS 24.501 [23]) from the PLMN(s) included in the *plmn-IdentityList* in *SIB1;*

The email discussion [Post109e#18][PRN] [R2-2002659] on this this issue had the following conclusion:

* No case has been identified to include SNPN ID to the *RRCResumeComplete* message.
* Companies identified two cases when PNI-NPN ID should be included in *RRCResumeComplete* message:
1. When a UE moves between ePLMNs. In this case the PLMN ID should be indicated to the network in the *RRCResumeComplete*.
2. In case of manual CAG ID selection, the CAG ID may be needed in the *RRCResumeComplete* depending on the reply LS from SA2/CT1.
* The discussion was postponed until responses are received from other WGs as the decision on whether the selected PLMN-Identity can refer to a PNI-NPN in *RRCResumeComplete* message depends on issue 1.

An LS in [R2-2002417](http://3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109_e/Docs/R2-2002417.zip) was sent on manual CAG ID selection and CT1 answers are in [C1-202846](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_123e/Docs/C1-202846.zip)/R2-200???? (see details in issue 1).

**Question 2a: Do you agree that the SNPN ID is never added to the *RRCResumeComplete*?**

**Question 2b: Based on the received answers in** [**C1-202846**](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_123e/Docs/C1-202846.zip) **do you agree that the CAG ID is never added to the *RRCResumeComplete*?**

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| --- | --- | --- | --- |
| **Company** | **Answer to Q2a** | **Answer to Q2b** | **Comment** |
| Qualcomm | Yes | Yes |  |
| Nokia | Yes | Yes |  |
| Vodafone | Yes | Yes  |  |
| Ericsson | Yes | Yes |  |
| Futurewei | Yes | Yes |  |
| CATT | Yes | ? | Q2b depends on Question 1.1 in LS [R2-2002417](http://3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109_e/Docs/R2-2002417.zip), Question 1.1 is not answered in C1-202846.do we need to wait for SA2 response on Question 1.1? |
| Huawei | Yes | Yes |  |
| ZTE | Yes | - | Agree with CATT that we can wait for more input from SA2. |
| Intel | Yes | Yes | For Q2b, we do not think CT1 reply is related to this. The question is whether the gNB needs to perform access check including the selected CAG ID during resumption or it is just based on the allowed CAG list. If it is just based on the latter, then there is no need for CAG ID in the RRC Resume Complete, which is our view. Even though SA1 replied to CT1 that the UE shall not include the selected CAG ID to the allowed CAG ID, this does not preclude the inclusion of the selected CAG ID in the allowed CAG list (as part of the mobility restriction list) on the network side. This will allow the RAN node to check the resumption with the allowed CAG list for CAG access check. Hence there is no need to include the CAG ID in the RRCResumeComplete for the manual CAG selection case. |
| Lenovo | Yes | Yes | To Q2b: This is aligned with CT1 reply in R2-2002502 (C1-201027) received in RAN2#109bis-e, where CT1 confirmed that there is no need for the UE to send the CAG ID in AS/RRC. |

## 2.3 Issue 3: Granularity of advertised UAC parameters

**Open issue description:** Whether it is sufficient to broadcast the Unified Access Control (UAC) parameters per PLMN (assuming that using the operator-defined access categories with access category criteria type set to the S-NSSAI used for PNI-NPN is sufficient to provide CAG specific UAC) or there is need to enable the broadcast of CAG ID specific configuration of UAC parameters?

An LS in [R2-2002417](http://3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109_e/Docs/R2-2002417.zip) was sent with the following questions:

Question 2.1; TO: SA1:
Is there a requirement to enable PNI-NPN (CAG ID) specific access control in cells that are shared among PNI-NPNs belonging to the same PLMN?

Question 2.2; TO: CT1, SA1:
If there is a requirement to enable PNI-NPN (CAG ID) specific access control in cells that are shared among PNI-NPNs belonging to the same PLMN, then is it sufficient to broadcast the Unified Access Control (UAC) parameters per PLMN (assuming that using the operator-defined access categories with access category criteria type set to the S-NSSAI used for PNI-NPN is sufficient to provide CAG specific UAC) or there is need to enable the broadcast of CAG ID specific configuration of UAC parameters?

* CT1 answer in [C1-202846](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_123e/Docs/C1-202846.zip)/R2-200????: As this question is dependent on service requirements which do not exist yet, this question can be answered only if and when the service requirements are specified by SA1.

**No discussion is possible before other WGs provide answers.**

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| --- | --- |
| **Company** | **Comment** |
| Ericsson | Our interpretation is that there exist no requirements on per-CAG UAC-parameters. In absence of such we assume RAN2 should have as working assumption that this is not needed.  |
| Lenovo | Agree with Ericsson. If we don’t receive any response from SA1 (or other group) by end of RAN2#110e then we suggest to go with the “per PLMN” option to be able to freeze ASN.1 by June 2020. |
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## 2.4 Issue 4: Network indexing for NPNs

**Open issue description:** A definition of network indexing for NPNs is FFS

In RRC signalling PLMN index is used to optimize RRC signalling. PLMN index defined in the following way:

The PLMN index is defined as *b1+b2+…+b(n-1)+i* for the PLMN included at the *n*-th entry of *PLMN-IdentityInfoList* and the *i*-th entry of its corresponding *PLMN-IdentityInfo*, where *b(j)* is the number of *PLMN-Identity* entries in each *PLMN-IdentityInfo*, respectively, the use of the PLMNs

At RAN2#190e it was agreed to introduce NPN indexing in a similar way, and the followings were agreed:

2.1 There is no need to create any order between SNPNs and PNI-NPNs during the indexing.

* 1. For cells shared between PLMNs and NPNs, NPN capable UEs use the first PLMN ID in the Rel-15 PLMN list.

3.1 The selectedPLMN-Identity can refer to a NPN (a SNPN or a PNI-NPN) or set of PNI-NPNs having the same PLMN ID (in case CAG ID is not sent in the RRC message) in the description of RRCSetupComplete message and the relevant procedures.

However, the details of NPN indexing have been left open, more specifically it is open whether PNI-NPNs belonging to the same PLMN will have separate index or not.

The current specification only contains the following:

The NPN index is defined as B+FFS, where B is the index used for the last PLMN in the *PLMNIdentittyInfoList*. In NPN-only cells B is considered 0.

The email discussion [Post109e#18][PRN] [R2-2002659] on this this issue concluded to postpone the discussion/decision of this issue after there is a decision for issue 4.

**Question 4a: Do you agree if it is required to enable the broadcast of CAG ID specific configuration of UAC parameters, then All PNI-NPNs have its own index value?**

**Question 4b: Do you agree if it is not required to enable the broadcast of CAG ID specific configuration of UAC parameters, then PNI-NPNs belonging to the same PLMN have a common index value?**

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| --- | --- | --- | --- |
| **Company** | **Answer to Q4a** | **Answer to Q4b** | **Comment** |
| Qualcomm | No | Yes | Q4a: Even if UAC is different per CAG ID, the network has access to the UE’s allowed CAG list and can determine if the UE performed access within the UAC configuration, OR if the UE misbehaved. |
| Nokia | Yes | No, see comment | Q4a: If CAG ID specific UAC parameters may be needed then a separate network indexes are needed for all CAG IDs as PLMN index is used in *UAC-BarringPerPLMN*:UAC-BarringPerPLMN ::= SEQUENCE { plmn-IdentityIndex INTEGER (1..maxPLMN), uac-ACBarringListType CHOICE{ uac-ImplicitACBarringList SEQUENCE (SIZE(maxAccessCat-1)) OF UAC-BarringInfoSetIndex, uac-ExplicitACBarringList UAC-BarringPerCatList } OPTIONAL -- Need S}Q4b: CAG ID specific network indexing enables possible future CAG ID specific feature extension. However, PLMN specific network indexing is also acceptable, as at the moment there is no features that mandates CAG ID specific network indexing. |
| Vodafone  | Yes | No  | Q4a: Yes, all PNI-NPN should have their own configuration Q4b: No, this approach is confusing and does not give the operator sufficient graduality or selection of various integrated private networks  |
| Ericsson | - | Yes | As indicated above, our understanding is that, until requirements are added, we can proceed assuming no specific configuration per CAG ID. CT1 response also indicated no such requirement exist. |
| Futurewei | Yes | Yes | In this release, PLMN specific network indexing is needed only if there is CAG ID specific configuration of UAC parameters. |
| CATT | No | Yes | Agree with Ericsson |
| Huawei | Yes | Yes |  |
| ZTE | - | Yes | We share the same understanding with Ericsson that there is no requirement for per CAG UAC for the time being. |
| Intel | Yes | Yes | Our view is that CAGID specific configuration of UAC parameters is not required for Rel-16 and the existing NSSAI based UAC configuration using operator defined access category is sufficient. |
| Lenovo |  |  | Depends on conclusion of issue 3. |

## 2.5 Issue 5: Manual CAG selection indication

**Open issue description:** RAN2 received a LS from CT1 in [R2-2004178](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2004178.zip)/C1-202927 asking if a RAN can specify the broadcast of a new indication that the PLMN allows a user to manually select a CAG-ID supported by the CAG cell.

At RAN2#109bis-e a reply LS was sent in R2-2003870 asking guidance from SA1 whether per PLMN or per CAG ID indication is needed.

During the email discussion there was a proposal to use the following ASN.1 encoding if per PLMN indication is needed:

**SOLUTION A**

NPN-Identity-r16 ::= CHOICE {

 pni-npn-r16 SEQUENCE {

 plmn-Identity-r16 PLMN-Identity,

 manualCAGselectionAllowed-r16 BOOLEAN,

 cag-IdentityList-r16 SEQUENCE (SIZE (1..maxNPN-r16)) OF CAG-Identity-r16

 },

 snpn-r16 SEQUENCE {

 plmn-Identity PLMN-Identity,

 nid-List-r16 SEQUENCE (SIZE (1..maxNPN-r16)) OF NID-r16

 }

}

In case of per CAG ID indication is needed the following extension can be used:

**SOLUTION B**

NPN-Identity-r16 ::= CHOICE {

 pni-npn-r16 SEQUENCE {

 plmn-Identity-r16 PLMN-Identity,

 cag-IdentityList-r16 SEQUENCE (SIZE (1..maxNPN-r16)) OF CAG-IdentityInfo-r16

 },

 snpn-r16 SEQUENCE {

 plmn-Identity PLMN-Identity,

 nid-List-r16 SEQUENCE (SIZE (1..maxNPN-r16)) OF NID-r16

 }

}

CAG-IdentityInfo-r16 ::= SEQUENCE {

 CAG-Identity-r16 BIT STRING (SIZE (32)),

 manualCAGselectionAllowed-r16 BOOLEAN

}

**Question 5a: Do you agree with Solution A if per PLMN indication is needed?**

**Question 5b: Do you agree with Solution B if per CAG ID indication is needed?**

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| --- | --- | --- | --- |
| **Company** | **Answer to Q5a** | **Answer to Q5b** | **Comment** |
| Qualcomm | Yes | Yes | Note that in we need to ensure in field description that UE considers this to apply only to the CAGs outside UE’s allowed list. |
| Nokia | Yes | Yes | Agree with QC |
| Vodafone | Yes | Yes | Agree with QC comments, (unless there is a special arrangement) network decides the allowed CAG list  |
| Ericsson | Yes | Yes | The above ASN.1 needs some modifications though:1. " manualCAGselectionAllowed " -> " manualCAG-selectionAllowed"
2. Instead of "BOOLEAN" for the field manualCAGselectionAllowed we think a "ENUMERATED{true} OPTIONAL" is more in-line with how we usually write this. See for example field " ims-EmergencySupport " in SIB1.

The first field in the IE CAG-IdentityInfo-r16 should be "cag-Identity-r16" instead of "CAG-Identity-r16" |
| Futurewei | Yes | Yes |  |
| CATT | ? | Yes | We do not see any necessity to apply option A in RAN2 if it is concluded that it need to be configured per PLMN. It is natural that a PLMN level configuration is configured by NAS and then NAS informs it to AS.Besides, there are some other disadvantages with configuring it in RAN1. It is strange that a PLMN level “manualCAGselectionAllowed” is associated to cag-IdentityList-r16 in the SIB1.
2. NW side should make sure each cells of the particular PLMN to configure the same value “manualCAGselectionAllowed” for a particular PLMN.
3. UE is required receive and act on the “manualCAGselectionAllowed” for a same PLMN during cell change. we see a redundant behaviour for UE.
 |
| Huawei | Yes | Yes | Agree with QC. Besides, the indication can also be in SIB10:SIB10-r16 ::= SEQUENCE { hrnn-List-r16 HRNN-List-r16 OPTIONAL, -- Need R manualCAGselectionAllowed-List-r16 ManualCAGselectionAllowed-List-r16 OPTIONAL, -- Need R lateNonCriticalExtension OCTET STRING OPTIONAL, ...}HRNN-List-r16 ::= SEQUENCE (SIZE (1..maxNPN-r16)) OF HRNN-r16ManualCAGselectionAllowed-List-r16 ::= SEQUENCE (SIZE(1..maxNPN-r16)) OF ManualCAGselectionAllowed-r16HRNN-r16 ::= SEQUENCE { hrnn-r16 OCTET STRING (SIZE(1.. maxHRNN-Len-r16)) OPTIONAL -- Need R}ManualCAGselectionAllowed-r16 ::= SEQUENCE { manualCAGselectionAllowed-r16 ::= ENUMERATED {allowed} OPTIONAL -- Need R}The field description of *ManualCAGselectionAllowed-List* can be slightly different for per-PLMN and per-CAG indication. |
| ZTE | Yes | Yes | Agree with the proposed changes from Ericsson and we prefer to have such indication in SIB1 rather than SIB10. |
| Intel | Yes | Yes |  |
| Lenovo |  |  | Need to wait for response from SA1 or CT1 but we prefer to have the flag in SIB1 since Manual CAG selection can be performed even w/o presence of SIB10. Furthermore, we agree with QC that it needs to be clarified in field description that the flag applies to CAGs outside UE’s Allowed CAG list. |

## 2.6 Issue 6 (RIL Q006): NEED code for SIB10

**Open issue description (SIB10 in 6.3.1):**

SIB10-r16 ::= SEQUENCE {

 hrnn-List-r16 HRNN-List-r16 OPTIONAL, -- Need R

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 ...

}

**Question 6: Which solution do you think is appropriate for the comment?**

* **Option A:** Use “NEED S” and specify UE behaviour it in 5.2.2.4.11
* **Option B:** No change is needed
* **Option C:** Other (please provide description)

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| --- | --- | --- |
| **Company** | **Answer** | **Comment** |
| Qualcomm | B (soft) | Need R looks okay. However, we are fine with Option A also. |
| Nokia | B | Option A is acceptable, but not necessary |
| Vodafone | B |  |
| Ericsson | A | The HRNN is only used for Manual selection, hence must not be acquired unless a manual selection procedure is initiated by higher layers. UEs can instead save power. Need S makes sense, and to describe this.  |
| Futurewei | B | If HRNN is present, UE AS needs to read and report it to NAS, which can be used to facilitate manual selection. |
| CATT | B |  |
| Huawei | B | We prefer the current “Need R”. One concern regarding QC’s proposal is that:If SIB10 is broadcasted following the on-demand request from a UE, then SIB10 needs to be broadcast continually, otherwise all UEs will release HRNN.If the network wants to de-configure the entire HRNN list, it can be simply viewed as SIB10 modification, and the normal SI modification procedure can be used (in this case, the network broadcasts an empty HRNN list). Or the UE can delete the stored HRNN after 3 hours. |
| ZTE | B | There is no need to change the Need R but we do not think network has to provide an empty *hrnn-List* to de-configure the HRNN . UE can simply discard the stored HRNN if network stop broadcasting SIB 10 for some time.In addition to the *hrnn-Lis*t in SIB 10, almost all the optional fields in system information are interpreted as Need R, which means network has to always provide a final SIB with all these fields empty if we agree to do so. We do not think it is necessary to agree on such a principle with the following considerations:(1) If network decides to stop broadcasting a SIB, UE gets to know that from the scheduling information in SIB 1 and can then discard the stored SIB after some time.*The UE shall:* *1> delete any stored version of a SIB after 3 hours from the moment it was successfully confirmed as valid;*(2) It has been clearly specified as above that UE will delete any stored SIB after 3 hours which means UE will eventually discard the stored SIB after network stop broadcasting it and thus there seems to be no need to de-configure it via empty fields.Thus, our understanding is that (a) UE will not delete the stored SIB immediately after network stop broadcasting; (b) There is no need for network to de-configure some field by broadcasting an empty one.Since there may be some different understanding on the Need R in system information and this impacts not only NPN , some clarification is still needed to make sure all the vendors are on the same page.For the *hrnn-List* which has been forwarded to the upper layers, it is our understanding that UE will delete it after 3 hours from the moment the SIB10 was successfully confirmed as valid if network stop broadcasting SIB10. We are also fine to make such behavior clear in 5.2.2.4.11 |
| Intel | Option B | SIB only provide a particular snapshot of the SIB. We do not need to describe the transition where the information change within the SIB. |
| Lenovo | Option C | Option C: change presence of hrnn-List-r16 to mandatory.It would be a waste of resources to broadcast an empty SIB10. |

## 2.7 Issue 7 (RIL Z102): Definition of selected PNI-NPN

**Open issue description:** There is the following open RIL in 5.2.2.4.2 Actions upon reception of the SIB1:

1> if the cell is not an NPN-only cell and the *cellAccessRelatedInfo* contains an entry with the *PLMN-Identity* of the selected PLMN:

2> in the remainder of the procedures use *plmn-IdentityList*, *trackingAreaCode*, and *cellIdentity* for the cell as received in the corresponding *PLMN-IdentityInfo* containing the selected PLMN;

1> if the *cellAccessRelatedInfo* contains an entry with the *NPN-Identity* of the selected NPN:

2> in the remainder of the procedures use *npn-IdentityList*, *trackingAreaCode*, and *cellIdentity* for the cell as received in the corresponding *NPN-IdentityInfo* containing the selected NPN;

**Question 7: Which solution do you think is appropriate for the comment?**

* **Option A:** Create a definition for the selected PNI-NPN as proposed (alternative wording proposals are welcome)
* **Option B:** Other (please provide description)

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| --- | --- | --- |
| **Company** | **Answer** | **Comment** |
| Qualcomm | B | The term “containing the selected SNPN or PLMN” should be used. Given the tranckingAreaCode and cellIdentity are PLMN specific rather than CAG specific, there is no need to define a selected PNI-NPN in this procedure. |
| Nokia | B | The comment is valid, current text is not correct for PNI-NPNs. The problem of option A is that in case of automatic network selection any CAG ID that supported by the cell and is in the allowed CAG ID list can be considered “selected PNI-NPN”.  |
| Vodafone  | B | Agree with Nokia’s comment, there is a room for error in the definition of the PNI-NPN and differentiation should be made between CAG cells, within a PLMN |
| Ericsson | B | Agree with Qualcomm. |
| Futurewei | B | Agree with Qualcomm |
| CATT | B | Agree with Qualcomm |
| Huawei | B | We have some concern on Qualcomm’s proposal.In the current 38.331, there are three places where “selected NPN” appears:1> if the *cellAccessRelatedInfo* contains an entry with the *NPN-Identity* of the selected NPN (1st, Issue 7):2> in the remainder of the procedures use *npn-IdentityList*, *trackingAreaCode*, and *cellIdentity* for the cell as received in the corresponding *NPN-IdentityInfo* containing the selected NPN (2nd, Issue 7);3> if *trackingAreaCode* is not provided for the selected PLMN nor the registered PLMN nor PLMN of the equivalent PLMN list nor the selected NPN (3rd, Issue 8) nor the registered NPN:Option B in Issue 8 removes the 3rd reference. Qualcomm’s proposal in Issue 7 handles the 2nd reference. However, the 1st reference still requires a definition for “selection NPN”.In CT1, there is only “Registered/Selected SNPN”, no concept like “Registered/Selected NPN” or “Registered/Selected PNI-NPN” (there is “Selected CAG” though). Besides, according to SA2 spec 23.501, the PNI-NPN can be deployed as a slice or a CAG, so we think it’s better to use “Selected CAG” instead of “Selected PNI-NPN”.Proposed change:Selected NPN: This is the SNPN or ~~PNI-NPN~~CAG that has been selected by the NAS, either manually or automatically. The selected SNPN is identified by an NID in combination with a PLMN ID. The selected ~~PNI-NPN~~CAG is identified by a CAG-ID in combination with a PLMN ID. |
| ZTE | B | 1. As mentioned by Huawei, our comment is on all the selected NPN mentioned in 5.2.2.4.2. Agree that the proposed change from QC can address the second reference but we still need to consider the first reference because the selected NPN as follows is used to differentiate from selected PLMN

Upon receiving the *SIB1* the UE shall:1> store the acquired *SIB1*;1> if the *cellAccessRelatedInfo* contains an entry with the *PLMN-Identity* of the selected PLMN:2> in the remainder of the procedures use *plmn-IdentityList*, *trackingAreaCode*, and *cellIdentity* for the cell as received in the corresponding *PLMN-IdentityInfo* containing the selected PLMN;1> else if the *cellAccessRelatedInfo* contains an entry with the *NPN-Identity* of the selected NPN:2> in the remainder of the procedures use *npn-IdentityList*, *trackingAreaCode*, and *cellIdentity* for the cell as received in the corresponding *NPN-IdentityInfo* containing the selected NPN;However, we do not fully agree with Huawei’s proposal to use the selected CAG because the definition for CAG in TS38.331 is “CAG:Closed Access Group” and we have not found definition of selected CAG in TS23.501 which we may refer to.1. Another option is to change into the following:

Upon receiving the *SIB1* the UE shall:1> store the acquired *SIB1*;1> if the *cellAccessRelatedInfo* contains an entry with the *PLMN-Identity* or *NPN-Identity* of the selected PLMN:2> in the remainder of the procedures use *plmn-IdentityList*, *trackingAreaCode*, and *cellIdentity* for the cell as received in the corresponding *PLMN-IdentityInfo* or *NPN-IdentityInfo* containing the selected PLMN;1> else if the *cellAccessRelatedInfo* contains an entry with the *NPN-Identity* of the selected SNPN:2> in the remainder of the procedures use *npn-IdentityList*, *trackingAreaCode*, and *cellIdentity* for the cell as received in the corresponding *NPN-IdentityInfo* containing the selected SNPN; |
| Intel | Option B | Include the definition of selected NPN in TS38.304 like selected PLMN. |
| Lenovo | B | No definition of selected PNI-NPN needed and agree with Qualcomm proposal. |

## 2.8 Issue 8 (RIL Z103): Definition of registered PNI-NPN

**Open issue description:** There is the following open RIL in 5.2.2.4.2 Actions upon reception of the SIB1:

3> if *trackingAreaCode* is not provided for the selected PLMN nor the registered PLMN nor PLMN of the equivalent PLMN list nor the selected NPN nor the registered NPN:

At RAN2#109-e it was agreed that TAC is mandatory for NPN cells:

4. (Proposal 14 from R2-2002659): TAC is “mandatory” within NPN-IdentityInfoList. To be captured into ASN.1 review file as RIL comment (by the rapporteur).

**Question 8: Which solution do you think is appropriate for the comment?**

* **Option A:** Create a definition for the Registered NPN as proposed (alternative wording proposals are welcome)
* **Option B:** Remove the NPN from this bullet point as TAC is mandatory for NPN cells:

3> if trackingAreaCode is not provided for the selected PLMN nor the registered PLMN nor PLMN of the equivalent PLMN list:

* **Option C:** Other (please provide description)

|  |  |  |
| --- | --- | --- |
| **Company** | **Answer** | **Comment** |
| Qualcomm | B |  |
| Nokia | B |  |
| Vodafone | B |  |
| Ericsson | B |  |
| Futurewei | B |  |
| CATT | B |  |
| Huawei | B | Option B is the simplest. In CT1, there is only “Registered/Selected SNPN”, no concept like “Registered/Selected NPN” or “Registered/Selected PNI-NPN” (there is “Selected CAG” though). Therefore, it is better to avoid terminology like “registered NPN”. |
| ZTE | B |  |
| Intel | B | This will never happen to NPN since trackingAreaCode is mandatory in the NPN list |
| Lenovo | B |  |

## 2.9 Issue 9 (RIL I902 and I903): Selected PLMN ID in *RRCSetupComplete*

**Open issue description:** There are the following open RIL in 5.3.3.4 Reception of the RRCSetup by the UE:

2> if upper layers selected a PLMN or an SNPN (TS 24.501 [23]):

3> set the *selectedPLMN-Identity* to the PLMN or SNPN selected by upper layers (TS 24.501 [23]) from the PLMN(s) included in the *plmn-IdentityList* or npn-IdentityInfoList in *SIB1*;

Editor's Note: It is FFS how to set the the *selectedPLMN-Identity* when a PNI-NPN is selected.

The following agreement was made at RAN2#109e:

3.1 The selectedPLMN-Identity can refer to a NPN (a SNPN or a PNI-NPN) or set of PNI-NPNs having the same PLMN ID (in case CAG ID is not sent in the RRC message) in the description of RRCSetupComplete message and the relevant procedures.

**Question 9a: Which solution do you think is appropriate for the comment?**

* **Option A:** Follow the proposal of the RIL comments:

2> set the *selectedPLMN-Identity* to the PLMN or SNPN selected by upper layers (TS 24.501 [23]) from the PLMN(s) included in the *plmn-IdentityList* or the PLMN(s) or SNPN(s) included in the *npn-IdentityInfoList* in *SIB1*;

* **Option B:** Other (please provide description)

**Question 9b: Do you agree that the Editor’s Note “It is FFS how to set the the selectedPLMN-Identity when a PNI-NPN is selected” can be removed after finding a solution in Question 9a?**

|  |  |  |  |
| --- | --- | --- | --- |
| **Company** | **Answer to Q9a** | **Answer to Q9b** | **Comment** |
| Qualcomm | A | Yes |  |
| Nokia | A | Yes |  |
| Vodafone  | A | Yes |  |
| Ericsson | A | Yes | Unclear what is meant by “can be removed after finding a solution in Question 9b”…should be 9a? . In any event, if Option A is selected in 9a, we don’t think the FFS is needed. |
| Futurewei | A | Yes |  |
| CATT | A | Yes |  |
| Huawei | A | Yes |  |
| ZTE | A | Yes |  |
| Intel | A | Yes |  |
| Lenovo | A | Yes |  |

# 3 Conclusions

## 3.1 The following proposals are proposed to be agreed without further discussion:

## 3.2 The following issues are proposed to be discussed further