**3GPP TSG-RAN WG2 Meeting #109bis-e R2-2003895**

**Electronic, 20 – 30 April 2020**

**Agenda item: 6.18.2**

**Source: Nokia (Rapporteur)**

**Title: Offline discussion 105: PRN open issues - first round**

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

**Document for: Discussion and Decision**

# 1 Introduction

This document is the report about the first round of the following email discussion

* [AT109bis-e][105][PRN] Open issues (Nokia)

Scope: Continue the discussion on PRN open issues, based on R2-2002659

Initial intended outcome: Set of proposals with full consensus agreeable via email, based on the list in Section 4.1 of R2-2002659 (final list to be reflected in R2-2003895)

Initial intermediate deadline (for companies' feedback): Tuesday 2020-04-21 09:00 UTC

Proposals in Section 4.1 of R2-2002659 not challenged until Tuesday 2020-04-21 09:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

# 2 Proposals from Section 4.1 of R2-2002659

**Proposal 1** (Proposal 4 from R2-2002659):Remove the Editor’s Note: “It is FFS whether the above needs to capture the condition that the cell is “not reserved for operator use for UEs not belonging to AC 11 or 15” from Table 4.2-1 of 38.304.

**Proposal 2** (Proposal 7 from R2-2002659)**:** The PRN rapporteur of 38.304 (Qualcomm) will create a documentation proposal for the following agreement: *“For unlicensed spectrum and for a UE with non-empty allowed CAG list, if the highest ranked cell or best cell according to absolute priority reselection rules is a cell which is not suitable due to not broadcasting the selected/registered/equivalent PLMN, the UE with no empty allowed CAG list shall behave according to NR-U agreement.”* as a part of the running CR.

**Proposal 3** (Proposal 8 from R2-2002659)**:** In unlicensed band the case when the highest ranked cell or best cell is not suitable due to belonging to the correct operator, but it is not a CAG member cell is handled in the same way as the cell does not belong to the correct operator. The relevant changes are to be captured in 38.304.

**Proposal 4** (Proposal 13 from R2-2002659)**:** Follow the CT4 agreement on NID size in RRC specification. To be captured into ASN.1 review file as RIL comment (by the rapporteur) as shown below.

\*\*\*\*\*\*\*\* Start of Change \*\*\*\*\*\*\*\*

***NPN-Identity* information element**

-- ASN1START

-- TAG-NPN-IDENTITY-START

NPN-Identity-r16 ::= CHOICE {

 pni-npn-r16 SEQUENCE {

 plmn-Identity-r16 PLMN-Identity,

 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

 }

}

CAG-Identity-r16 ::= BIT STRING (SIZE (32))

NID-r16 ::= BIT STRING (SIZE (44))

-- TAG-NPN-IDENTITY-STOP

-- ASN1STOP

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| --- |
| ***NPN-Identity* field descriptions** |
| ***CAG-Identity***A CAG-ID as specified in TS 23.003 [21]. The PLMN ID and a CAG ID in the *NPN-Identity* identifies a PNI-NPN. |
| ***cag-IdentityList***The *cag-IdentityList* contains one or more *CAG-Identity*. All CAG IDs associated to the same PLMN ID are listed in the same *cag-IdentityList* entry*.* |
| ***NID***A NID as specified in TS 23.003 [21]. The PLMN ID and a NID in the *NPN-Identity* identifies a SNPN. |
| ***nid-List***The *nid-List* contains one or more *NID*. |

\*\*\*\*\*\*\*\* End of Change \*\*\*\*\*\*\*\*

**Proposal** **5** (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) as shown below.

\*\*\*\*\*\*\*\* Start of Change \*\*\*\*\*\*\*\*

***NPN-IdentityInfoList* information element**

-- ASN1START

-- TAG-NPN-IDENTITYINFOLIST-START

NPN-IdentityInfoList-r16 ::= SEQUENCE (SIZE (1..maxNPN-r16)) OF NPN-IdentityInfo-r16

NPN-IdentityInfo-r16 ::= SEQUENCE {

 npn-IdentityList-r16 SEQUENCE (SIZE (1..maxNPN-r16)) OF NPN-Identity-r16,

 trackingAreaCode-r16 TrackingAreaCode,

 ranac-r16 RAN-AreaCode OPTIONAL, -- Need R

 cellIdentity-r16 CellIdentity,

 cellReservedForOperatorUse-r16 ENUMERATED {reserved, notReserved},

 ...

}

-- TAG-NPN-IDENTITYINFOLIST-STOP

-- ASN1STOP

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| --- |
| ***NPN-IdentityInfoList* field descriptions** |
| ***NPN-IdentityInfo***The *NPN-IdentityInfo* contains one or more NPN identities and additional information associated with those NPNs. Only the same type of NPNs (either SNPNs or PNI-NPNs) can be listed in a *NPN-IdentityInfo* element. |
| ***npn-IdentityList***The *npn-IdentityList* contains one or more NPN Identity elements. |
| ***trackingAreaCode***Indicates the Tracking Area Code to which the cell indicated by cellIdentity field belongs.  |
| ***Ranac***Indicates the RAN Area Code to which the cell indicated by cellIdentity field belongs.  |
| ***trackingAreaCode***Indicates Tracking Area Code to which the cell indicated by cellIdentity field belongs.  |
| ***cellReservedForOperatorUse***Indicates whether the cell is reserved for operator use (for the NPN(s) identified in the *npn-IdentyList*) as defined in TS 38.304 [20]. |

\*\*\*\*\*\*\*\* End of Change \*\*\*\*\*\*\*\*

**Proposal 6** (Proposal 15 from R2-2002659)**:** Use 48 octets (Option C) as the maximum size of HRNNs. To be captured into ASN.1 review file as RIL comment (by the rapporteur) as shown below.

\*\*\*\*\*\*\*\* Start of Change \*\*\*\*\*\*\*\*

maxHRNN-Len-r16 INTEGER ::= 48 -- Maximum length of HRNNs

\*\*\*\*\*\*\*\* End of Change \*\*\*\*\*\*\*\*

**Proposal 7** (Proposal 18 from R2-2002659)**:** Follow the NR-U agreement in unlicensed on the use of the IFRI flag:

* For the SNPN case, UE only follows the IFRI in MIB of a barred cell if the cell belongs to a SNPN which matches the registered SNPN of the UE. Otherwise the UE may select other cell in the same frequency
* For the CAG (PNI-NPN) case, there is no change to the existing NR-U behaviour: UE only follows the IFRI in MIB of a barred cell if the cell belongs to a registered/selected (e)PLMN. Otherwise the UE may select other cell in the same frequency.

The agreement is to be captured in TS 38.304.

**Question: Which proposal(s) from the above proposals do you disagree? (Adding your company’s view is only needed if you disagree with one or more of the proposals. Please indicate the proposal number and the reason of the disagreement in separate lines in the table below.)**

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| --- | --- | --- |
| **Company** | **Prop #** | **Reasoning** |
| Ericsson | 3 | In unlicensed bands, the UE should only be allowed to reselect to a non-strongest cell on a frequency if the strongest cell belongs to the incorrect operator. If the strongest cell belongs to the correct operator but it is a not a CAG member cell the UE should not consider this cell and other cells on the same frequency. The motivation is to minimize inter-cell interference among the operator controlled cells and it’s also aligned with the current NR-U behaviour.  |
| Samsung | 3 | The NRU agreement also means that UE camps on best cell of its operator i.e. regardless of licensed or unlicensed UE is on best cell of its operator. Keeping this principle in mind, in the context of NPN, the NRU is applicable at the level of PLMN ID check in the NPN list.  |
| Qualcomm | 3 | It seems that proposal 3 needs more discussion. One compromise option is to allow operator control in this case by using IFRI setting from the cell that “belongs to the correct operator but not a CAG member cell for the UE”. |
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**Summary:**

# 2 Conclusions