**3GPP TSG-RAN WG2 Meeting #122 *R2-2306834***

**Incheon, South Korea, 22– 26 May 2023**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.304** | **CR** | **0XXX** | **rev** | **-** | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Clarifications on the use of SIB16 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell, Ericsson, Kyocera | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_Slice-Core | | | | |  | ***Date:*** | | | 2023-05 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The relation of slice-based reselection information received in SIB16 and in dedicated signaling is ambiguous. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | This CR clarifies this issue based on the following principles:  1) If SIB16 is absent, UE follows the slice-based reselection information received *RRCRelease* message.  2) If SIB16 is present, the UE only considers the NSAG-frequency pairs present in the RRCRelease, and only applies the relevant cell lists present in SIB16. (E.g., if an NSAG-Frequency pair is configured in RRCRelease, but not present in SIB16 the UE applies the slice-based cell reselection prioritys provided in dedicated signaling for the given NSAG and frequency and considers that the given NSAG is available in all the cells on the given frequency.  The following changes are introduced:   1. In 5.2.4.1:    1. A NOTE is added to clarify that UE derives reselection priorities according to clause 5.2.4.11 also in case SIB16 is not broadcast in the camped cell. 2. In 5.2.4.11:    1. Clarified that UE if FreqPriorityListDedicatedSlicing is configured the UE only considers the NSAG-frequency pairs indicated in FreqPriorityListDedicatedSlicing for slice based cell reselection    2. Clarified that if SIB16 is not broadcast then the UE considers all cells on frequency support the NSAG when the given NSAG frequency pair is present in the FreqPriorityListDedicatedSlicing.   **Impact analysis**  Architecture options  NR SA  Impacted functionality:  Slice based cell reselection  Inter-operability:  If only the network is implemented according to the CR and the UE is not, no interoperability problems are foreseen.  If only the UE is implemented according to the CR and the network is not, no interoperability problems are foreseen. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The applicability of information for slice based reselection received in dedicated signaling is ambiguous. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.4.1, 5.2.4.11 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*Start of change*

#### 5.2.4.1 Reselection priorities handling

Absolute priorities of different NR frequencies or inter-RAT frequencies may be provided to the UE in the system information, in the *RRCRelease* message, or by inheriting from another RAT at inter-RAT cell (re)selection. In the case of system information, an NR frequency or inter-RAT frequency may be listed without providing a priority (i.e. the field *cellReselectionPriority* is absent for that frequency). If any fields with *cellReselectionPriority* or *nsag-CellReselectionPriority* are provided in dedicated signalling, the UE shall ignore any fields with *cellReselectionPriority* and *nsag-CellReselectionPriority* provided in system information.

When UE is in camped normally state, if it supports slice-based cell reselection and has received the network slice(s) and NSAG information from NAS to be used for cell reselection, UE shall derive reselection priorities according to clause 5.2.4.11.

NOTE X: UE derives reselection priorities according to clause 5.2.4.11 also in case *SIB16* (see TS 38.331 [3]) is not broadcast in the camped cell.

If UE is in *camped on any cell* state, UE shall only apply the priorities provided by system information from current cell, and the UE preserves priorities provided by dedicated signalling and *deprioritisationReq* received in *RRCRelease* unless specified otherwise. When the UE in camped normally state, has only dedicated priorities other than for the current frequency, the UE shall consider the current frequency to be the lowest priority frequency (i.e. lower than any of the network configured values). When the HSDN capable UE is in High-mobility state, the UE shall always consider the HSDN cells to be the highest priority (i.e., higher than any other network configured priorities). When the HSDN capable UE is not in High-mobility state, the UE shall always consider HSDN cells to be the lowest priority (i.e., lower than any other network configured priorities). If the UE is configured to perform both NR sidelink communication and V2X sidelink communication, the UE may consider the frequency providing both NR sidelink communication configuration and V2X sidelink communication configuration to be the highest priority. If the UE is configured to perform NR sidelink communication and not perform V2X communication, the UE may consider the frequency providing NR sidelink communication configuration to be the highest priority. If the UE is configured to perform V2X sidelink communication and not perform NR sidelink communication, the UE may consider the frequency providing V2X sidelink communication configuration to be the highest priority.

NOTE 0a: The frequency only providing the anchor frequency configuration should not be prioritized for V2X service during cell reselection, as specified in TS 38.331[3].

NOTE 0b: When UE is configured to perform NR sidelink communication or V2X sidelink communication performs cell reselection, it may consider the frequencies providing the intra-carrier and inter-carrier configuration have equal priority in cell reselection.

NOTE 0c: The prioritization among the frequencies which UE considers to be the highest priority frequency is left to UE implementation unless otherwise stated.

NOTE 0d: The UE is configured to perform V2X sidelink communication or NR sidelink communication, if it has the capability and is authorized for the corresponding sidelink operation.

NOTE 0e: When UE is configured to perform both NR sidelink communication and V2X sidelink communication, but cannot find a frequency which can provide both NR sidelink communication configuration and V2X sidelink communication configuration, UE may consider the frequency providing either NR sidelink communication configuration or V2X sidelink communication configuration to be the highest priority.

NOTE 0f: Void.

The UE shall only perform cell reselection evaluation for NR frequencies and inter-RAT frequencies that are given in system information and for which the UE has a priority provided.

If the MBS broadcast capable UE is receiving or interested to receive an MBS broadcast service(s) and can only receive this MBS broadcast service(s) by camping on a frequency on which it is provided, the UE may consider that frequency to be the highest priority during the MBS broadcast session as specified in TS 38.300 [2] as long as the two following conditions are fulfilled:

1) SIB1 scheduling information of the cell reselected by the UE due to frequency prioritization for MBS contains SIB20;

2) Either:

- One or more MBS FSAI(s) of that frequency is indicated in SIB21 of the serving cell and the same MBS FSAI(s) is also indicated for this MBS broadcast service in MBS User Service Description (USD) as specified in TS 26.346 [20], or

- SIB21 is not provided in the serving cell and that frequency is included in the USD of this service, or

- SIB21 is provided in the serving cell but does not provide the frequency mapping for the concerned service, and that frequency is included in the USD of this service.

NOTE 0g: It is up to UE implementation which frequency to select, when the USD provides multiple frequencies for the service the UE is interested in.

If the MBS broadcast capable UE is receiving or interested to receive an MBS broadcast service, the UE may consider cell reselection candidate frequencies at which it cannot receive the MBS broadcast service to be of the lowest priority during the MBS broadcast session as specified in TS 38.300 [2], as long as SIB1 scheduling information of the cell contains SIB20 on the MBS frequency which the UE monitors and as long as the condition 2) above is fulfilled for the serving cell.

NOTE 0h: Example scenarios in which such down-prioritisation may be needed include the cases where camping is not possible for the UE on the MBS broadcast frequency (e.g. the MBS broadcast frequency belongs to a PLMN different from UE's registered PLMN) while the UE can receive the MBS broadcast service when camped on another frequency than the MBS broadcast frequency or current frequency.

NOTE 0i: The frequency prioritization for MBS broadcast, NR sidelink communication, or V2X sidelink communication may override the re-selection priorities for slice-based cell reselection.

In case UE receives *RRCRelease* with *deprioritisationReq*, UE shall consider current frequency and stored frequencies due to the previously received *RRCRelease* with *deprioritisationReq* or all the frequencies of NR to be the lowest priority frequency (i.e. lower than any of the network configured values) while T325 is running irrespective of camped RAT. The UE shall delete the stored deprioritisation request(s) when a PLMN selection or SNPN selection is performed on request by NAS (TS 23.122 [9]).

NOTE 1: UE should search for a higher priority layer for cell reselection as soon as possible after the change of priority. The minimum related performance requirements specified in TS 38.133 [8] are still applicable.

NOTE 1a: The UE does not consider MBS broadcast, NR sidelink communication or V2X sidelink communication functionality to replace cell reselection priorities caused by HSDN or *deprioritisationReq* functionality.

The UE shall delete priorities provided by dedicated signalling when:

- the UE enters a different RRC state; or

- the optional validity time of dedicated priorities (T320) expires; or

- the UE receives an *RRCRelease* message with the field *cellReselectionPriorities* absent; or

- a PLMN selection or SNPN selection is performed on request by NAS (TS 23.122 [9]).

NOTE 2: Equal priorities between RATs are not supported.

The UE shall not consider any exclude-listed cells as candidate for cell reselection.

The UE shall consider only the allow-listed cells, if configured, as candidates for cell reselection.

The UE in RRC\_IDLE state shall inherit the priorities provided by dedicated signalling and the remaining validity time (i.e. T320 in NR and E-UTRA), if configured, at inter-RAT cell (re)selection.

NOTE 3: The network may assign dedicated cell reselection priorities for frequencies not configured by system information.

*Start of change*

#### 5.2.4.11 Reselection priorities for slice-based cell reselection

The UE derives reselection priorities for slice-based cell reselection by using:

- NAS provided NSAG information, only for NSAG(s) associated with the network slice(s) provided by NAS for cell reselection (see TS 23.501 [10], TS 24.501 [14]),

- *sliceInfoList* and/or *sliceInfoListDedicated* per frequency with *nsag-CellReselectionPriority* per NSAG, if provided in system information and/or dedicated signalling (see TS 38.331 [3]),

- *cellReselectionPriority* per frequency provided in system information and/or dedicated signalling (see TS 38.331 [3]).

The UE considers an NR frequency to support all slices of an NSAG if

- the nsag-ID and TA of the NSAG as provided by NAS are indicated for the NR frequency (see TS 38.331[3]). If *FreqPriorityListDedicatedSlicing* is configured, UE only considers the NSAG-frequency pairs indicated in *FreqPriorityListDedicatedSlicing* for slice-based cell reselection.

The UE considers a cell on an NR frequency to support all slices of an NSAG if

*-* the nsag-ID and TA of the NSAG as provided by NAS are indicated for the NR frequency in dedicated signalling but not in *SIB16* (see TS 38.331 [3]); or

*-* the nsag-ID and TA of the NSAG as provided by NAS are indicated for the NR frequency in *SIB16* (see TS 38.331 [3]); and

- the cell is either listed in the *sliceAllowedCellListNR* (if provided in the *sliceInfoList*) or the cell is not listed in the *sliceExcludedCellListNR* (if provided in the *sliceInfoList*); or

- Neither *sliceAllowedCellListNR* nor *sliceExcludedCellListNR* is configured in the *sliceInfoList*.

The UE shall derive reselection priorities for slice-based cell reselection according to the following rules:

- Frequencies that support at least one prioritized NSAG received from NAS have higher reselection priority than frequencies that support none of the NSAG(s) received from NAS.

- Frequencies that support at least one NSAG provided by NAS are prioritised in the order of the NAS-provided priority for the NSAG with highest priority supported on the frequency.

- Among the frequencies (one or multiple) that support the highest prioritised NSAG(s) with the same NAS-provided priorities, the frequencies are prioritized in the order of their highest *nsag-CellReselectionPriority* given for these NSAG(s). If no *nsag-CellReselectionPriority* is given for a NSAG at a frequency, the lowest priority value is used (i.e, lower than any of the network configured values for these frequencies).

- Frequencies that support none of the NSAG(s) provided by NAS are prioritized in the order of their *cellReselectionPriority*.

For a UE performing slice-based cell reselection, if the highest ranked cell or best cell in a frequency fulfils the inter- freqeuency cell reselection criteria (see clause 5.2.4.5) based on reselection priority for the frequency and NSAG derived according to this clause or fulfils intra-frequency and equal priority inter-frequency cell reselection criteria (see clause 5.2.4.6), but this cell does not support the NSAG according to this clause:

- if this cell supports any other NSAG(s) according to this clause, the UE shall re-derive a reselection priority for the frequency by considering the NSAG(s) supported by this cell (rather than those of the corresponding NR frequency);

- Otherwise, the UE shall re-derive a reselection priority for the frequency as if none of the NSAG(s) provided by NAS is supported.

This re-derived reselection priority is used for a maximum of 300 seconds, or until new network slice(s) and/or NSAG information are received from NAS. UE shall ensure the cell reselection criteria above are fulfilled based on the newly derived priorities.

*End of change*