**3GPP TSG-RAN WG4 Meeting #112 *R4-2413888***

**Maastricht, Netherlands, 19th - 23rd August, 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.133** | **CR** | **4685** | **rev** | **1** | **Current version:** | **17.14.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | (NR\_MG\_enh-Core] CR on Rel-17 NCSG pattern (Rel-17 spec) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | OPPO, CATT | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_MG\_enh-Core | | | | |  | ***Date:*** | | | 2024-08-22 |
|  |  | | | |  | |  | | |  |
| ***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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | For Rel-17 NCSG patterns in clause 9.1.9, when only FR2 serving cells and neighbor cells are configured,the VIL requirements for Per UE NCSG pattern #12~23 should be 0.75ms but not 1ms. It is not aligned with the agreements on the RF swiching of the corresponding patterns. | | | | | | | | |
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| ***Summary of change:*** | | Correct the VIL requirements for per UE NCSG patterns #12~23. | | | | | | | | |
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| ***Consequences if not approved:*** | | The NCSG patterns and VIL requirements will be confusing and incorrect. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 9.1.9.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **x** |  | Test specifications | | | | TS 38.533 | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**------------ START OF CHANGE 1--------------**

9.1.9 Network controlled small gap

9.1.9.1 Introduction

The UE capable of network controlled small gap (NCSG) pattern can be configured with a NCSG pattern via RRC signalling [2].

This clause contains the general requirements on the UE regarding to Network Controlled Small Gap (NCSG).

The requirements in this clause are applicable for UE configured with SA NR (with single carrier or NR CA) operation mode.

It is up to UE implementation whether or not the UE is able to conduct transmission in the following slot(s),

- when *mgta* is not applied, in the L consecutive UL slots with respect to the SCS of the UL carrier with the same slot indices as the DL slots occurring immediately after the last each of the interrupted slots after VIL1 and VIL2.

- when *mgta* is applied and the SCS of the UL carrier is other than 15kHz, in the L consecutive UL slots with respect to the SCS of the UL carrier with the same slot indices as the DL slots occurring immediately after the last each of the interrupted slots after VIL1 and VIL2.

- when *mgta* is applied and the SCS of the UL carrier is 15kHz, in the L consecutive UL slots with respect to the SCS of the UL carrier with the same slot indices as the DL slots occurring immediately after the slot partially overlapped with each of the interrupted slots after VIL1 and VIL2.

where UL slot denotes that all the symbols in the slot are uplink symbols, and L=1 if  for the UL transmission is less than the length of one slot; L=2 otherwise.

Note: Network is supposed to take into account the possible difference between the estimated TA at network and actual TA at UE when scheduling UE in the above slot(s).

The interruptions of NCSG in number of slots are listed in Table 9.1.9-1 on all serving cells when per-UE NCSG is configured with pattern #0-11 or on FR1 serving cells when per-FR FR1 NCSG is configured to *ncsg-MeasGapPerFR-r17* capable UE. The interruptions of NCSG in number of slots are listed in Table 9.1.9-2 on all serving cells when per-UE NCSG is configured with pattern #12-23 or on FR2 serving cells when per-FR FR2 NCSG is configured to *ncsg-MeasGapPerFR-r17* capable UE. There are two interruptions in each NCSG occasion, VIL1 before ML and VIL2 after ML, in NR standalone (with single carrier or NR CA). Each of them has number of interrupted slots captured in Table 9.1.9-1 and Table 9.1.9-2.

**Table 9.1.9-1: Number of interrupted slots on all serving cells for per-UE NCSG pattern #0-11 or FR1 serving cells for per-FR FR1 NCSG during each VIL in NR standalone operation (with single carrier, NR CA)**

|  |  |
| --- | --- |
| **NR** | **Number of interrupted slots on serving cells** |
| **SCS** | **When MG timing advance of 0ms is applied** |
| **(kHz)** | **VIL=1ms** |
| 15 | 1 |
| 30 | 2 |
| 60 | 4 |
| 120 | 8 |
| NOTE 1: NR SCS of 120 kHz is only applicable to the case with per-UE NCSG.  NOTE 2: Void | |

**Table 9.1.9-2: Number of interrupted slots on all serving cells for per-UE NCSG pattern #12-23 or FR2 serving cells for per-FR FR2 NCSG during each VIL in NR standalone operation (with single carrier, NR CA)**

|  |  |  |
| --- | --- | --- |
| **NR** | **Number of interrupted slots on serving cells** | |
| **SCS** | **When MG timing advance of 0ms is applied** | **When MG timing advance of 0.75ms is applied** |
| **(kHz)** | **VIL=0.75ms** | **VIL=0.75ms** |
| 60 | 3 | 3 |
| 120 | 6 | 6 |
| NOTE 1: Void | | |

**------------ End OF CHANGE 1--------------**