**3GPP TSG- Meeting #112**

**Maastricht, Netherlands, August, 19 -**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.133** | **CR** | **4929** | **rev** | **1** | **Current version:** | **18.6.0** |  |
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| *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:*** | Draft CR 38.133 Corrections to Case 2 core requirements for NR\_MG\_enh2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, CATT, CMCC, Ericsson, OPPO | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_MG\_enh2-Core | | | | |  | ***Date:*** | | | 2024-08-09 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | |  |
|  | *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:*** | | Missing UE behaviour in case dynamic collisions are not supported as agreed in the WF for NR\_MG\_enh2 in R4-2410376. | | | | | | | | |
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| ***Summary of change:*** | | Corrections to Case 2 requirements are made.  Specified UE behaviour is based on the agreement from R4#111 in the online session (R4-2410376):  “- For UE configured with one NCSG and one Type 1/2 MG: All deactivated SCells are measured within NCSG, regardless of the reported UE capabilities [and gap association].  - Further details on the processing delay between NCSG and Type 1/2 MG can be further discussed.  - For UE configured with 2 NCSG, deactivated SCells are measured with NCSG  - If the association is provided, deactivated SCells are measured with NCSG according to gap association.  - If the association is not provided, UE is not expected to cause interruption outside the VIL due to measurement on any of the deactivated SCells, and the existing measurement delay requirement does not apply to this case.” | | | | | | | | |
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| ***Consequences if not approved:*** | | Incomplete specification, as UE behaviour is not specified in case of deactivated SCell measurements for Case 2. | | | | | | | | |
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| ***Clauses affected:*** | | 9.1.13.1, 9.1.13.2, 9.1.13.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | None. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revision of R4-2413310. | | | | | | | | |

**--- Start of change 1 ---**

9.1.13 Concurrent measurement gaps with NCSG

9.1.13.1 Introduction

When UE supports *concurrentMeasGapsNCSG-r18* capability, network can provide multiple measurement gaps with at least one of the measurement gaps is NCSG configured by RRC message(s) as specified in TS 38.331 [2].

Requirements in this clause apply when the UE is in SA operation mode.

9.1.13.2 Requirements

If the UE requires concurrent measurement gaps and/or NCSG to identify and measure intra-frequency cells and/or inter-frequency cells and/or inter-RAT E-UTRAN cells, and the UE supports *concurrentMeasGapsNCSG-r18* but does not support independent measurement gap patterns for different frequency ranges as specified in [14] or the UE does not support *ncsg-MeasGapPerFR-r17*, in order for the requirements in the following clauses to apply, the network can provide one per-UE concurrent measurement gap and one per-UE NCSG or at most two per-UE NCSGs for monitoring of all frequency layers.

If the UE requires concurrent measurement gaps and/or NCSG to identify and measure intra-frequency cells and/or inter-frequency cells and/or inter-RAT E-UTRAN cells, and the UE supports *concurrentMeasGapsNCSG-r18,* *independentGapConfig, concurrentPerUE-PerFRCombMeasGap-r17* and *ncsg-MeasGapPerFR-r17*  as specified in [14], in order for the requirements defined for concurrent measurement gaps with NCSG to apply, the network can provide the concurrent measurement gap with NCSG combinations configurations specified in Table 9.1.13-1 for monitoring of all frequency layers.

**Table 9.1.13-1: The number of Gap Combination Configurations by UE supporting concurrent measurement gap with NCSG patterns, per-FR NCSG patterns and independent measurement gap patterns**

|  |  |  |  |
| --- | --- | --- | --- |
| **Gap Combination**  **Configuration Id** | **The number of simultaneous configured measurement gap patterns** | | |
| **Per-FR1 measurement gap/NCSG** | **Per-FR2 measurement gap/NCSG** | **Per-UE measurement gap/NCSG** |
| 0 | 2 | 1 | 0 |
| 1 | 1 | 2 | 0 |
| 2 | 0 | 0 | 2 |
| 3Note 1 | 1 | 0 | 1 |
| 4Note 1 | 0 | 1 | 1 |
| 5Note 1 | 1 | 1 | 1 |
| 6 | 2 | 0 | 0 |
| 7 | 0 | 2 | 0 |
| Note 1: Gap Combination Configuration Id #3, #4, #5 will be only applied when one per-UE measurement gap (cannot be NCSG) is associated to measure PRS for any RSTD, PRS-RSRP, RSCP, RSCPD, UE Rx-Tx time difference and PRS-RSRPP measurement defined in TS 38.215 [4], and one per-FR measurement gap in an FR is NCSG.  [Note 2: In Gap Combination Configuration Id #0, #1, #6, #7, one per-FR measurement gap in an FR (and cannot be NCSG) can be associated to measure PRS for any RSTD, PRS-RSRP, RSCP, RSCPD, UE Rx-Tx time difference and PRS-RSRPP measurement defined in TS 38.215 [4] provided that UE supports *independentGapConfigPRS-r17*.]  Note 3: In Gap Combination Configuration Id #0, #1, #2, #6, #7, one FR can be configured with up to 2 NCSGs, regardless they are per-UE or per-FR configured. Otherwise, the gaps can only be configured as Gap(s) configured via *GapConfig* without suffix or Gap(s) configured via *GapConfig-r17* without *preConfigInd-r17* or *ncsgInd-r17*. | | | |

For UE configured in the SA operation mode, when monitoring of multiple inter-RAT E-UTRAN carrier frequency layers, intra-frequency NR carrier frequency layers and/or inter-frequency NR carrier frequency layers as configured by PCell using gaps, each monitored carrier frequency layer, including following measurement types:

- a measurement object with SSB based measurement,

- E-UTRA inter-RAT measurement object,

can be associated to either one concurrent measurement gap pattern or one NCSG pattern, while the following measurement types:

- a measurement object with CSI-RS based measurement,

- E-UTRAN inter-RAT RSTD measurement,

- NR PRS-based positioning measurement,

can be only associated to one measurement gap pattern. Requirements for *concurrentMeasGapsNCSG-r18* apply provided that each frequency layer is only associated with one concurrent measurement gap or one NCSG, and at least one of the gaps is NCSG. There can be one or more frequency layers associated with each concurrent measurement gap or each NCSG. Furthermore, if the UE is not capable of *concurrentMeasGapEUTRA-r17*[2], all E-UTRAN measurement objects shall be associated with a single concurrent measurement gap or NCSG for the requirement to apply.

When UE supports *concurrentMeasGapNCSG-r18*, where at least one of the concurrent gaps is NCSG, supported concurrent measurement gap patterns are listed in Table 9.1.2-1 based on the applicability specified in table 9.1.2-3, while supported NCSG patterns are listed in Table 9.1.9.3-1 based on the applicability specified in table 9.1.9.3-2.

The requirements in clause 9.1.2 are also applicable for the UE capable of and configured with multiple [concurrent measurement gap with NCSG] patterns within each concurrent measurement gap pattern. The requirements in clause 9.1.9 are also applicable for the UE capable of and configured with multiple [concurrent measurement gap with NCSG] patterns within each NCSG pattern.

When UE is configured with concurrent measurement gaps with NCSG, where one NCSG is configured, the UE shall measure all de-activated SCCs within the NCSG, if fully or partially overlapped, regardless of the reported UE capabilities and gap association.

When UE is configured with concurrent measurement gaps with NCSG, where two NCSGs are configured, the UE shall measure all de-activated SCCs within the NCSGs, if fully or partially overlapped.

* if the gap association is provided, de-activated SCCs shall be measured with NCSG according to gap association.
* if the gap association is not provided, UE is not expected to cause interruption outside the VIL due to measurement on any of the de-activated SCCs, and the existing measurement delay requirement does not apply in this case.

9.1.13.3 Collision involving NCSGs

Collisions between occasions of concurrent measurement gap and NCSG or of two NCSGs may occur as specified in this clause if the two occasions are

- two per-UE NCSGs, or

- two per-FR NCSGs in the same FR, or

- one per-UE NCSG and one per-UE measurement gap, or

- one per-FR NCSG and one per-UE measurement gap, or

- one per-FR NCSG and one per-FR measurement gap in the same FR.

and if the gap collision condition specified in clause 9.1.8.3 is met then the gap collision rule applies.

When the first occasion is NCSG, the ending point of the first occasion is the end of VIL2 and/or when the second occasion is NCSG, the starting point of the second occasion is the start of VIL1. The requirements with [concurrent measurement gaps with NCSG] apply provided that two gaps (at least one of the gaps is NCSG) colliding with each other are configured with different priorities.

**--- End of change 1 ---**