**3GPP TSG-RAN4 Meeting #111 *R4-240xxxx***

**Fukuoka, Japan, 20 – 24 May, 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.133** | **CR** | 4564 | **rev** | 1 | **Current version:** | **17.13.0** |  |
|  | | | | | | | | |
| *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\_NTN\_solutions-Core) CR on Rel-17 NTN RRM requirements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_NTN\_solutions-Core | | | | |  | ***Date:*** | | | 2024-04-23 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | 1. There is still editor’s note in clause 9.1C. 2. In clause 9.1C.8, some requirements are referring to TN clauses. Also, the overhead cap of con-MGs from TN are missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Remove the editor’s note in clause 9.1C. 2. Correct the reference clause numbers. Add the overhead cap of con-MGs from TN. | | | | | | | | |
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| ***Consequences if not approved:*** | | The IE names are not aligned in RAN2 and RAN4 spec. Requirements for con-MG in NTN are not fully complete. | | | | | | | | |
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| ***Clauses affected:*** | | 9.1C, 9.1C.8, 9.2C.3.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 1>

9.1C General measurement requirement for SAN

9.1C.1 Introduction

This clause contains general requirements on the UE regarding measurement reporting in RRC\_CONNECTED state. The requirements are split in intra-frequency, inter-frequency and L1-RSRP measurements requirements. These measurements may be used by the NG-RAN. The measurement quantities are defined in TS38.215 [4], the measurement model is defined in TS38.300 [10], TS37.340 [17] and measurement accuracies are specified in clause 10. Control of measurement reporting is specified in TS 38.331 [2].

<End of Change 1>

<Start of Change 2>

9.1C.8 Concurrent measurement gaps for SAN

9.1C.8.1 Introduction

When UE supports concurrent measurement gap pattern capability, network can provide multiple measurement gaps configured by RRC message(s) as specified in TS 38.331 [2].

9.1C.8.2 Requirements

If the UE requires measurement gaps to identify and measure intra-frequency cells and/or inter-frequency cells, and the UE supports concurrent measurement gap patterns (*parallelMeasurementGap*), in order for the requirements in the following clauses to apply the network can provide at most two per-UE measurement gap patterns for monitoring of all frequency layers.

For UE configured with the SA operation, when monitoring of multiple intra-frequency and 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,

can be associated to one or two measurement gap pattern provided the network configures the concurrent measurement gap patterns.

When UE supports concurrent measurement gap patterns, each measurement gap pattern supported by the UE is listed in Table 9.1C.2-1.

The requirements in clause 9.1C.2 are also applicable for the UE capable of and configured with multiple concurrent measurement gap patterns within each measurement gap pattern.

When UE supports concurrent measurement gap patterns and configured with more than 1 per-UE measurement gap patterns, requirements do not apply if the UE is configured with more than one measurement gap pattern (MGP) with measurement gap repetition period (MGRP) of 20ms.

9.1C.8.3 Collision between concurrent measurement gaps

Collisions between occasions of two concurrent measurement gaps may occur as specified in this clause if the two measurement gaps are

- two per-UE measurement gaps, or

When UE is configured with concurrent measurement gaps, two measurement gap occasions are considered colliding if at least one of the following conditions is met:

- the two occasions are fully or partially overlapping in time domain, or

- the distance between the two occasions is equal to or smaller than 4ms.

The distance between two measurement gap occasions is defined as the time difference between the ending point of the first occasion and the starting point of the second occasion, where the first measurement gap occasion occurs earlier in time than the second measurement gap occasion.

If two colliding measurement gaps are not fully overlapping, in case of collision between two measurement gap occasions, the UE shall perform measurements in the occasion of the measurement gap with higher priority, and the occasion of the measurement gap with lower priority shall be dropped. The UE shall be able to transmit PUCCH/PUSCH/SRS or receive PDCCH/PDSCH/TRS/CSI-RS for CQI in the corresponding NR serving cells in the slots that are not interrupted according to requirements in clause 9.1C.8.4.

If two colliding measurement gaps are fully overlapping with MGRP=160ms, in case of collision between two measurement gap occasions, the UE shall perform measurements in the occasion of one of the measurement gaps, and it is up to UE implementation which occasion is used for measurement, provided that UE can meet the requirements in clause 9.2C and 9.3C.

If two measurement gaps are fully overlapping with MGRP<160ms, no measurement requirements apply.

9.1C.8.4 Measurement gap related requirements of concurrent measurement gaps

A slot is considered as interrupted if it is interrupted by an occasion of any of the configured concurrent measurement gaps following the measurement gap interruption requirements in clause 9.1C.2, except for a dropped measurement gap occasion.

<End of Change 2>