**3GPP TSG-RAN Meeting #117 *R1-240xxxx***

**Fukuoka, Japan, 20 – 24. May 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.214** | **CR** | **DRAFT** | **rev** | **-** | **Current version:** | **17.9.0** |  |
|  |
| *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 | **x** | Core Network |  |

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|  |
| ***Title:***  | Draft CR for 38.214 for capturing NR over NTN operation  |
|  |  |
| ***Source to WG:*** | Nokia |
| ***Source to TSG:*** | R1 |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** | 2024-05-21 |
|  |  |  |  |  |
| ***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 canbe 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:*** | Current Rel-17 specifications does not contain references to the TS 38.101-5 (which defines frequency bands and requirements for these). Without these, it is not possible to extract e.g. frequency bands, UE Tx power control limits, etc. |
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| ***Summary of change:*** | Update of refences to capture operation of NR over NTN for Rel-17 |
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| ***Consequences if not approved:*** | Rel-17 NR over NTN will not be implementable. |
|  |  |
| ***Clauses affected:*** | 2, 7 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 38.211, TS 38.213  |
| ***affected:*** |  | **x** |  Test specifications |  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

**<Unchanged parts omitted>**

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications"

[2] 3GPP TS 38.201: " NR; Physical Layer – General Description"

[3] 3GPP TS 38.202: "NR; Services provided by the physical layer"

[4] 3GPP TS 38.211: "NR; Physical channels and modulation"

[5] 3GPP TS 38.212: "NR; Multiplexing and channel coding"

[6] 3GPP TS 38.213: "NR; Physical layer procedures for control"

[7] 3GPP TS 38.215: "NR; Physical layer measurements"

[8] 3GPP TS 38.101: "NR; User Equipment (UE) radio transmission and reception"

[9] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception"

[10] 3GPP TS 38.321: "NR; Medium Access Control (MAC) protocol specification"

[11] 3GPP TS 38.133: "NR; Requirements for support of radio resource management"

[12] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification"

[13] 3GPP TS 38.306: "NR; User Equipment (UE) radio access capabilities"

[14] 3GPP TS 38.423: "NG-RAN; Xn Application Protocol (XnAP)"

[15] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation"

[16] 3GPP TS 37.213: "Physical layer procedures for shared spectrum channel access"

[17] 3GPP TS 37.355: "LTE Positioning Protocol (LPP)"

[18] 3GPP TS 38.822: "NR; User Equipment (UE) feature list"

[21] 3GPP TS 38.101-5: “User Equipment (UE) radio transmission and reception; Part 5: Satellite access Radio Frequency (RF) and performance requirements NR”

**<Unchanged parts omitted>**

# 7 UE procedures for transmitting and receiving on a carrier with intra-cell guard bands

For operation with shared spectrum channel access for FR1, when the UE is configured with any of *IntraCellGuardBandsPerSCS* for UL carrier and for DL carrier with SCS configuration $μ$, the UE is provided with $ N\_{RB-set,x}-1$ intra-cell guard bands on a carrier with $μ$, each defined by start CRB and size in number of CRBs, $GB\_{ s,x}^{start,μ} $ and $GB\_{ s,x}^{size,μ} $, provided by higher layer parameters *startCRB* and *nrofCRBs*, respectively, where $s\in \left\{0,1,…,N\_{RB-set,x}-2\right\}$. The subscript *x* is set to DL and UL for the downlink and uplink, respectively. Where there is no risk of confusion, the subscript *x* can be dropped. The intra-cell guard bands separate $N\_{RB-set,x} $RB sets, each defined by start and end CRB, $RB\_{ s,x}^{start,μ} $and $RB\_{ s,x}^{end,μ}$, respectively. The UE does not expect that *nrofCRBs* is configured with non-zero value smaller than the applicable intra-cell guard bands as specified in [8, TS 38.101-1] corresponding to $μ$ and carrier size $N\_{grid,x}^{size,μ}$. The UE determines the start and end CRB indices for $s\in \left\{0,1,…,N\_{RB-set,x}-1\right\}$ as

$RB\_{ s,x}^{start,μ}=N\_{grid,x}^{start,μ}+\left\{\begin{matrix}0&s=0\\GB\_{ s-1,x}^{start,μ}+GB\_{ s-1,x}^{size,μ}&otherwise\end{matrix}\right.$

and

$RB\_{ s,x}^{end,μ}=N\_{grid,x}^{start,μ}+\left\{\begin{matrix}N\_{grid,x}^{size,μ}-1&s=N\_{RB-set,x}-1\\GB\_{ s,x}^{start,μ}-1&otherwise\end{matrix}\right.$

The RB set with index $s$ consists of $RB\_{s,x}^{size,μ}$ resource blocks where $ RB\_{s,x}^{size,μ}=RB\_{ s,x}^{end,μ}-RB\_{ s,x}^{start,μ}+1$. When the UE is not configured with *IntraCellGuardBandsPerSCS* for $μ$, the UE determines the CRB indices for the intra-cell guard band(s), if any, and corresponding RB set(s) according to the nominal intra-cell guard band and RB set pattern as specified in [8, TS 38.101-1] and [21, 38.101-5] corresponding to $μ$ and carrier size $N\_{grid,x}^{size,μ}$. For either or both DL and UL, if the nominal intra-cell guard band and RB set pattern as specified in [8, TS 38.101-1] and [21, 38.101-5] contains no intra-cell guard bands, the number of RB sets for the carrier is $N\_{RB-set,x}=1$.

**<Unchanged parts omitted>**