**3GPP TSG RAN WG1 #118bis** **R1-240xxxx**

Hefei, China, October 14th – 18th, 2024

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| *CR-Form-v12.2* | | | | | | | | |
| **DRAFT CHANGE REQUEST** | | | | | | | | |
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|  | **38.213** | **CR** |  | **rev** |  | **Current version:** | **18.4.0** |  |
|  | | | | | | | | |
| *For* [***HELP***](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:*** | TS 38.213 alignment with TS 38.331 for Rel-18 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Samsung | | | | | | | | | |
| ***Source to TSG:*** | R1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_MC\_enh-Core, Netw\_Energy\_NR, NR\_NetConRepeater, NR\_XR\_enh-Core, NR\_DSS\_enh, TEI18 | | | | |  | ***Date:*** | | | 2024-10-21 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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)* | |
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| ***Reason for change:*** | | 1. Misaligned parameter names with TS 38.331 v18.3.0 identified in the LS from RAN2 in R1-2407592. | | | | | | | | |
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| ***Summary of change:*** | | 1. Align parameter names with TS 38.331 v18.3.0 based on the LS from RAN2 in R1-2407592. | | | | | | | | |
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| ***Consequences if not approved:*** | | Ambiguous/incorrect/incomplete specifications. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 9.1.3.1, 10, 10.1, 10.4, 11.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\* Unchanged text is omitted \*\*\*

#### 9.1.3.1 Type-2 HARQ-ACK codebook in physical uplink control channel

\*\*\* Unchanged text is omitted \*\*\*

If a UE is provided by *mc-DCI-SetofCellsToAddModList* a number of sets of serving cells and is provided USS sets to monitor PDCCH for detection of DCI format 1\_3, the UE separately applies the following procedures for determining a corresponding second Type-2 HARQ-ACK sub-codebook for scheduling cells associated with DCI format 1\_3 that

- schedules PDSCH receptions on more than one serving cells from a set of serving cells, and/or

- does not include a SCell dormancy indication field or the SCell dormancy indication field is reserved, indicates SCell dormancy, and schedules PDSCH reception on one or more serving cells from the set of serving cells

- in the following, and for the purpose of providing HARQ-ACK information corresponding to SCell dormancy indication, the UE assumes that the UE receives a PDSCH on the serving cell associated with fields in DCI format 1\_3 used for SCell dormancy indication, as described in Clause 10.3, and that the PDSCH provides one transport block that the UE correctly decodes

from the procedures for determining a first Type-2 HARQ-ACK sub-codebook that is associated with unicast SPS PDSCH receptions or with any unicast DCI format scheduling a PDSCH reception on a single serving cell, or has associated HARQ-ACK information without scheduling a PDSCH reception as described in this clause. The UE appends the second Type-2 HARQ-ACK sub-codebook to the first Type-2 HARQ-ACK sub-codebook.

\*\*\* Unchanged text is omitted \*\*\*

# 10 UE procedure for receiving control information

\*\*\* Unchanged text is omitted \*\*\*

If a UE monitors the PDCCH candidate for a Type0-PDCCH CSS set on the serving cell according to the procedure described in clause 13, the UE may assume that no SS/PBCH block is transmitted in REs used for monitoring the PDCCH candidate on the serving cell.

If at least one RE of a PDCCH candidate for a UE on the serving cell overlaps with at least one RE of *lte-CRS-ToMatchAround* or of *LTE-CRS-PatternList*, the UE

- is not required to monitor the PDCCH candidate if the UE is not provided *pdcch-CandidateReceptionWithCRS-Overlap*,

- monitors the PDCCH candidate if the UE is provided *pdcchCandidateReception-WithCRSOverlap* and the UE indicates an associated capability corresponding to the configuration of *lte-CRS-ToMatchAround* or of *LTE-CRS-PatternList* [18, TS 38.306].

If a UE is provided *availableRB-SetsPerCell,* the UE is not required to monitor PDCCH candidates that overlap with any RB from RB sets that are indicated as unavailable for receptions by an available RB set indicator field in DCI format 2\_0 as described in clause 11.1.1. If the UE does not obtain the available RB set indicator for a symbol, the UE monitors PDCCH candidates on all RB sets in the symbol.

\*\*\* Unchanged text is omitted \*\*\*

## 10.1 UE procedure for determining physical downlink control channel assignment

\*\*\* Unchanged text is omitted \*\*\*

For each DL BWP configured to a UE in a serving cell, the UE is provided by higher layers with search space sets where, for each search space set from the search space sets, the UE is provided the following by *SearchSpace*:

- a search space set index , , by *searchSpaceId*

- an association between the search space set and a CORESET by *controlResourceSetId* or by *controlResourceSetId-v1610*

- a PDCCH monitoring periodicity of slots and a PDCCH monitoring offset of slots, by *monitoringSlotPeriodicityAndOffset* or by *monitoringSlotPeriodicityAndOffset-r17*

- a PDCCH monitoring pattern within a slot, indicating first symbol(s) of the CORESET for PDCCH monitoring within each slot where the UE monitors PDCCH, by *monitoringSymbolsWithinSlot*

- a duration of indicating a number of slots that the search space set exists by *duration*, or a number of slots in consecutive groups of slots where the search space set can exist by *duration-r17*

- a bitmap, by *monitoringSlotsWithinSlotGroup*, that applies per group of slots and provides a PDCCH monitoring pattern indicating slots in a group of slots for PDCCH monitoring

- a size of the group of slots is same as a size of *monitoringSlotsWithinSlotGroup*

- for a Type1-PDCCH CSS set provided by *ra-SearchSpace* in dedicated RRC signaling, or for a Type3-PDCCH CSS set, or for a USS set, the PDCCH monitoring pattern indicates only consecutive slots in the group of slots for PDCCH monitoring and, at least for one combination indicated by the UE as a capability, a number of the consecutive slots is not larger than

- for a Type1-PDCCH CSS set provided by *ra-SearchSpace* in *SIB1*, the PDCCH monitoring pattern indicates only up to 1 slot in the group of slots for PDCCH monitoring

- for a Type0-PDCCH CSS set or for a Type0A-PDCCH CSS set, or for a Type2-PDCCH CSS set, the PDCCH monitoring pattern indicates slots in the group of slots for PDCCH monitoring, and the slots are not restricted to be consecutive, and the number of those slots is not larger than the size of *monitoringSlotsWithinSlotGroup*

- a number of PDCCH candidates per CCE aggregation level by *aggregationLevel1*, *aggregationLevel2*, *aggregationLevel4*, *aggregationLevel8*, and *aggregationLevel16*, for CCE aggregation level 1, CCE aggregation level 2, CCE aggregation level 4, CCE aggregation level 8, and CCE aggregation level 16, respectively

- an indication that search space set is either a CSS set or a USS set by *searchSpaceType*

- if search space set is a CSS set

- an indication by *dci-Format0-0-AndFormat1-0* to monitor PDCCH candidates for DCI format 0\_0 and DCI format 1\_0

- an indication by *dci-Format2-0* to monitor one or two PDCCH candidates, or to monitor one PDCCH candidate per RB set if the UE is provided *freqMonitorLocations* for the search space set, for DCI format 2\_0 and a corresponding CCE aggregation level

- an indication by *dci-Format2-1* to monitor PDCCH candidates for DCI format 2\_1

- an indication by *dci-Format2-2* to monitor PDCCH candidates for DCI format 2\_2

- an indication by *dci-Format2-3* to monitor PDCCH candidates for DCI format 2\_3

- an indication by *dci-Format2-4* to monitor PDCCH candidates for DCI format 2\_4

- an indication by *dci-Format2-6* to monitor PDCCH candidates for DCI format 2\_6

- an indication by *dci-Format2-9* to monitor PDCCH candidates for DCI format 2\_9

- an indication by *dci-Format4-0* to monitor PDCCH candidates for DCI format 4\_0

- an indication by *dci-Format4-1*, or *dci-Format4-2*, or *dci-Format4-1-AndFormat4-2* to monitor PDCCH candidates for DCI format 4\_1, or DCI format 4\_2, or for both DCI format 4\_1 and DCI format 4\_2, respectively

- an indication by *searchSpaceLinkingId* that search space set is linked to another search space set for which is provided a same value for *searchSpaceLinkingId*

- if search space set is a USS set,

- an indication by *dci-Formats* to monitor PDCCH candidates either for DCI format 0\_0 and DCI format 1\_0, or for DCI format 0\_1 and DCI format 1\_1, or

- an indication by *dci-FormatsExt* to monitor PDCCH candidates for DCI format 0\_2 and DCI format 1\_2, or for DCI format 0\_1, DCI format 1\_1, DCI format 0\_2, and DCI format 1\_2, or

- an indication by *dci-FormatsMC* to monitor PDCCH candidates for one or both of DCI format 0\_3 and DCI format 1\_3, or

- an indication by *dci-FormatsSL* to monitor PDCCH candidates for DCI format 0\_0 and DCI format 1\_0, or for DCI format 0\_1 and DCI format 1\_1, or for DCI format 3\_0, or for DCI format 3\_1, or for DCI format 3\_0 and DCI format 3\_1, on an indication by *dci-FormasNCR* to monitor PDCCH candidates for DCI format 2\_8

- a bitmap by *freqMonitorLocations*, if provided, to indicate an index of one or more RB sets for the search space set , where the MSB in the bitmap corresponds to RB set in the DL BWP. For RB set indicated in the bitmap, the first PRB of the frequency domain monitoring location confined within the RB set is given by , where is the index of first common RB of the RB set [6, TS 38.214], and is provided by *rb-Offset* or if *rb-Offset* is not provided. For each RB set with a corresponding value of 1 in the bitmap, the frequency domain resource allocation pattern for the monitoring location is determined based on the first bits in *frequencyDomainResources* provided by the associated CORESET configuration.

If the *monitoringSymbolsWithinSlot* indicates to a UE to monitor PDCCH in a subset of up to three consecutive symbols that are same in every slot where the UE monitors PDCCH for all search space sets, the UE does not expect to be configured with a PDCCH SCS other than 15 kHz if the subset includes at least one symbol after the third symbol.

\*\*\* Unchanged text is omitted \*\*\*

If a UE

- is configured for single cell operation or for operation with carrier aggregation in a same frequency band, and

- monitors PDCCH candidates in overlapping PDCCH monitoring occasions in multiple CORESETs that have been configured with same or different *qcl-Type* set to 'typeD' properties on active DL BWP(s) of one or more cells

the UE monitors PDCCHs only in a CORESET, and in any other CORESET from the multiple CORESETs that have been configured with *qcl-Type* set to same 'typeD' properties as the CORESET, on the active DL BWP of a cell from the one or more cells

- the CORESET corresponds to the CSS set with the lowest index in the cell with the lowest index containing CSS, if any; otherwise, to the USS set with the lowest index in the cell with lowest index

- the lowest USS set index is determined over all USS sets with at least one PDCCH candidate in overlapping PDCCH monitoring occasions

If a UE

- is not provided *coresetPoolIndex* for first CORESETs, or is provided *coresetPoolIndex* with value 0 for first CORESETs, and

- is provided *coresetPoolIndex* with value 1 for second CORESETs, and

- is provided *twoQCL-TypeD-ForMultiDCI*

the UE applies the procedures in the above paragraph independently across the first CORESETs and the second CORESETs.

If a UE

- is configured for single cell operation or for operation with carrier aggregation in a same frequency band,

- monitors PDCCH candidates in overlapping PDCCH monitoring occasions in multiple CORESETs that have been configured with same or different *qcl-Type* set to 'typeD' properties on active DL BWP(s) of one or more cells, and

- is provided *twoQCLTypeDforPDCCHRepetition*

the UE monitors PDCCHs only in a first CORESET with *qcl-Type* set to first 'typeD' properties and, if any, in a second CORESET with *qcl-Type* set to second 'typeD' properties that are different than the first 'typeD' properties, and in any other CORESET from the multiple CORESETs with corresponding *qcl-Type* set to either the first 'typeD' properties or to the second 'typeD' properties

- the first CORESET corresponds to the CSS set with the lowest index in the cell with the lowest index containing CSS sets, if any; otherwise, to the USS set with the lowest index in the cell with lowest index

- excluding CSS sets and USS sets associated with CORESETs with *qcl-Type* set to first 'typeD' properties, the second CORESET corresponds to the CSS set with the lowest index in the cell with the lowest index containing CSS sets, if any; otherwise, to the USS set with the lowest index in the cell with lowest index, where the CSS set or the USS set includes *searchSpaceLinkingId* with same value as any CSS set or any USS set associated with CORESETs with *qcl-Type* set to first 'typeD' properties

- the lowest USS set index is determined over all USS sets with at least one PDCCH candidate in overlapping PDCCH monitoring occasions

\*\*\* Unchanged text is omitted \*\*\*

## 10.4 Search space set group switching and skipping of PDCCH monitoring

\*\*\* Unchanged text is omitted \*\*\*

When the PDCCH monitoring adaptation field indicates to a UE to skip PDCCH monitoring for a duration on the active DL BWP of a serving cell, the UE starts skipping of PDCCH monitoring at the beginning of a first slot that is after the last symbol of the PDCCH reception providing the DCI format with the PDCCH monitoring adaptation field.

- If the UE transmits a PUCCH providing a positive SR before the UE detects a DCI format providing the PDCCH monitoring adaptation field indicating to the UE to skip PDCCH monitoring for the duration on the active DL BWP of the serving cell, the UE shall monitor PDCCH regardless of PDCCH skipping indication on all serving cells of the corresponding Cell Group when the SR is pending [11, TS 38.321].

- If the UE transmits a PUCCH providing a positive SR after the UE detects a DCI format providing the PDCCH monitoring adaptation field indicating to the UE to skip PDCCH monitoring for the duration on the active DL BWP of the serving cell, the UE resumes PDCCH monitoring starting at the beginning of a first slot that is after a last symbol of the PUCCH transmission in all serving cells of the corresponding Cell Group.

- When the UE is provided *pdcch-MonitoringResumptionAfterNack*, after the UE detects a DCI format providing the PDCCH monitoring adaptation field indicating to the UE to skip PDCCH monitoring for the duration on the active DL BWP of the serving cell, if the UE transmits a PUCCH or a PUSCH providing a NACK value associated with a PDSCH reception that is scheduled by a DCI format in a PDCCH reception on the serving cell, the UE terminates PDCCH skipping, starting from the beginning of a first slot that is after a last symbol of the PUCCH or PUSCH transmission on the serving cell.

- During the time of *ra-ResponseWindow* or *msgB-ResponseWindow* or the duration where *ra-ContentionResolutionTimer* is running, the UE shall not skip PDCCH monitoring on SpCell.

- After the UE detects a DCI format providing the PDCCH monitoring adaptation field indicating to the UE to skip PDCCH monitoring for the duration on the active DL BWP of a SpCell, when contention resolution is successful [11, TS 38.321], the UE resumes PDCCH monitoring on the SpCell.

- After the UE detects a DCI format providing the PDCCH monitoring adaptation field indicating to the UE to skip PDCCH monitoring for the duration on the active DL BWP of a serving cell, when a pending SR is cancelled [11, TS 38.321], the UE resumes PDCCH monitoring in all serving cells of the corresponding Cell Group.

- If UE transmits a RACH due to positive SR, the UE shall not skip PDCCH monitoring on any serving cell of the corresponding Cell Group during the time of *ra-ResponseWindow* or *msgB-ResponseWindow* or the duration where *ra-ContentionResolutionTimer* is running. If DRX is configured and the DRX group of the serving cell enters outside Active Time, the UE terminates PDCCH skipping for the serving cell.

\*\*\* Unchanged text is omitted \*\*\*

## 11.5 Adaptation of cell operation

A UE configured for operation on a serving cell according to one or both of a cell DTX operation and a cell DRX operation by c*ellDTRX-DCI-Config* for the serving cell [11, TS 38.321], can be additionally provided by *dci-Format2-9* a Type3-PDCCH CSS set to monitor PDCCH for detection of DCI format 2\_9 as described in clause 10.1 during Active Time [11, TS 38.321], and a location in DCI format 2\_9 by *positionInDCI-cellDTRX* of a cell DTX/DRX indication field for the serving cell and/or a NES-mode indication field for the PCell

- if the UE is configured with both cell DTX operation and cell DRX operation for the serving cell and if *cellDTX-DRX-L1activation* is provided, the cell DTX/DRX indication field includes two bits where the first bit indicates the cell DTX operation and the second bit indicates the cell DRX operation

- if the UE is configured with only one of the cell DTX operation and cell DRX operation for the serving cell and if *cellDTX-DRX-L1activation* is provided, the cell DTX/DRX indication field includes one bit indicating one of the cell DTX operation and cell DRX operation, respectively, for the serving cell

- a '0' value for a bit of the cell DTX/DRX indication field indicates deactivation of cell DTX or of cell DRX

- a '1' value for a bit of the cell DTX/DRX indication field indicates activation of cell DTX or of cell DRX

- if the serving cell is configured with a SUL carrier, the cell DTX/DRX indication field indication for activation or deactivation of cell DRX applies to both the UL carrier and the SUL carrier

- if *nesEvent* is configured, the NES-mode indication field includes one bit indicating NES-specific CHO execution condition, as described in [12, TS 38.331]

- a '0' value for the NES-mode indication field indicates NES-specific CHO execution condition is disabled

- a '1' value for the NES-mode indication field, indicates NES-specific CHO execution condition is enabled

A UE does not expect to monitor PDCCH for detection of DCI format 2\_9 on more than one serving cells of one cell group.

\*\*\* Unchanged text is omitted \*\*\*