**3GPP TSG-RAN WG2 Meeting #121bis-eR2-2304555**

**Online, 17th – 26th April 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  |  | **CR** | **3968** | **rev** | 1 | **Current version:** |  |  |
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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 | **x** | Core Network |  |

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| ***Title:***  | Correction to RRC for 71 GHz on channel occupancy duration |
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| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | NR\_ext\_to\_71GHz-Core |  | ***Date:*** | 2023-04-26 |
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| ***Category:*** |  |  | ***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 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | 1. Changes for RAN1 LS R1- 2302185

In this LS, RAN1 has informs RAN2 about the below agreements

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| AgreementThe values 120/480/960 kHz can be configured as reference subcarrier spacing in CO-DurationsPerCell-r17, and the values 15/30/60 kHz cannot be configured as reference subcarrier spacing in CO-DurationsPerCell-r17. * + Send an LS to RAN2 informative of the clarification
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 Corresponding update to the field description of *CO-DurationsPerCell* needs to be done. |
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| ***Summary of change:*** | 1. Update the field description of *subcarrierSpacing*in *CO-DurationsPerCell*. Similar changes as other fields *subcarrierSpacing* in RRC have been adopted, i.e., below texts are added to the field description of *subcarrierSpacing*in *CO-DurationsPerCell*

*Only the following values are applicable depending on the used frequency:* *FR1: 15, 30, or 60 kHz* *FR2-2: 120, 480, or 960 kHz*However, values for FR2-1 are not included due to that there is no unlicensed operation in FR2-1 for the moment.**Impact Analysis**Impacted 5G architecture options: NR SA, (NG)EN-DC, NE-DC,NR-DC Impacted functionality:Group common PDCCHInter-operability:if the network implements the change according to the CR and the UE does not, there is no inter-operability issue since the network will not configure the invalid *subcarrierSpacing* values*.*If the UE implements the change according to the CR and the network is not, there will be inter-operability issues since the network may configure a *subcarrierSpacing* value in *CO-DurationsPerCell-r17* which the UE doesn’t support. |
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| ***Consequences if not approved:*** | If the change is not approved, the network may configure invalid *subcarrierSpacing* values in *CO-DurationsPerCell-r17* to UE. |
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| ***Clauses affected:*** | 6.3.2 |
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|  | **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 ...  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** | Revision 0: basic changes captured in the CR R2-2302842Revision 1: wording change: “the used frequency” is changed to “the used frequency range” |

*Start of change*

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# 6 Protocol data units, formats and parameters (ASN.1)

## 6.3 RRC information elements

### 6.3.2 Radio resource control information elements

**<<<<Skipped>>>>**

#### – *SlotFormatIndicator*

The IE *SlotFormatIndicator* is used to configure monitoring a Group-Common-PDCCH for Slot-Format-Indicators (SFI).

*SlotFormatIndicator* information element

-- ASN1START

-- TAG-SLOTFORMATINDICATOR-START

SlotFormatIndicator ::= SEQUENCE {

 sfi-RNTI RNTI-Value,

 dci-PayloadSize INTEGER (1..maxSFI-DCI-PayloadSize),

 slotFormatCombToAddModList SEQUENCE (SIZE(1..maxNrofAggregatedCellsPerCellGroup)) OF SlotFormatCombinationsPerCell

 OPTIONAL, -- Need N

 slotFormatCombToReleaseList SEQUENCE (SIZE(1..maxNrofAggregatedCellsPerCellGroup)) OF ServCellIndex OPTIONAL, -- Need N

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 availableRB-SetsToAddModList-r16 SEQUENCE (SIZE(1..maxNrofAggregatedCellsPerCellGroup)) OF AvailableRB-SetsPerCell-r16 OPTIONAL, -- Need N

 availableRB-SetsToReleaseList-r16 SEQUENCE (SIZE(1..maxNrofAggregatedCellsPerCellGroup)) OF ServCellIndex OPTIONAL, -- Need N

 switchTriggerToAddModList-r16 SEQUENCE (SIZE(1..4)) OF SearchSpaceSwitchTrigger-r16 OPTIONAL, -- Need N

 switchTriggerToReleaseList-r16 SEQUENCE (SIZE(1..4)) OF ServCellIndex OPTIONAL, -- Need N

 co-DurationsPerCellToAddModList-r16 SEQUENCE (SIZE(1..maxNrofAggregatedCellsPerCellGroup)) OF CO-DurationsPerCell-r16 OPTIONAL, -- Need N

 co-DurationsPerCellToReleaseList-r16 SEQUENCE (SIZE(1..maxNrofAggregatedCellsPerCellGroup)) OF ServCellIndex OPTIONAL -- Need N

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 switchTriggerToAddModListSizeExt-r16 SEQUENCE (SIZE(1..maxNrofAggregatedCellsPerCellGroupMinus4-r16)) OF

 SearchSpaceSwitchTrigger-r16 OPTIONAL, -- Need N

 switchTriggerToReleaseListSizeExt-r16 SEQUENCE (SIZE(1.. maxNrofAggregatedCellsPerCellGroupMinus4-r16)) OF

 ServCellIndex OPTIONAL -- Need N

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 co-DurationsPerCellToAddModList-r17 SEQUENCE (SIZE(1..maxNrofAggregatedCellsPerCellGroup)) OF CO-DurationsPerCell-r17 OPTIONAL -- Need N

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}

CO-DurationsPerCell-r16 ::= SEQUENCE {

 servingCellId-r16 ServCellIndex,

 positionInDCI-r16 INTEGER(0..maxSFI-DCI-PayloadSize-1),

 subcarrierSpacing-r16 SubcarrierSpacing,

 co-DurationList-r16 SEQUENCE (SIZE(1..64)) OF CO-Duration-r16

}

CO-DurationsPerCell-r17 ::= SEQUENCE {

 servingCellId-r17 ServCellIndex,

 positionInDCI-r17 INTEGER(0..maxSFI-DCI-PayloadSize-1),

 subcarrierSpacing-r17 SubcarrierSpacing,

 co-DurationList-r17 SEQUENCE (SIZE(1..64)) OF CO-Duration-r17

}

CO-Duration-r16 ::= INTEGER (0..1120)

CO-Duration-r17 ::= INTEGER (0..4480)

AvailableRB-SetsPerCell-r16 ::= SEQUENCE {

 servingCellId-r16 ServCellIndex,

 positionInDCI-r16 INTEGER(0..maxSFI-DCI-PayloadSize-1)

}

SearchSpaceSwitchTrigger-r16 ::= SEQUENCE {

 servingCellId-r16 ServCellIndex,

 positionInDCI-r16 INTEGER(0..maxSFI-DCI-PayloadSize-1)

}

-- TAG-SLOTFORMATINDICATOR-STOP

-- ASN1STOP

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| *SlotFormatIndicator* field descriptions |
| ***availableRB-SetsToAddModList***A list of *AvailableRB-SetsPerCell* objects (see TS 38.213 [13], clause 11.1.1). |
| ***co-DurationsPerCellToAddModList***A list of *CO-DurationsPerCell* objects. If not configured, the UE uses the slot format indicator (SFI), if available, to determine the channel occupancy duration (see TS 38.213 [13], clause 11.1.1). |
| ***co-DurationsPerCellToReleaseList***A list of *CO-DurationsPerCell* objects to be released. An entry created using *co-DurationsPerCellToAddModList-r16* or *co-DurationsPerCellToAddModList-r17* can be deleted using *co-DurationsPerCellToReleaseList****.*** |
| ***dci-PayloadSize***Total length of the DCI payload scrambled with SFI-RNTI (see TS 38.213 [13], clause 11.1.1). |
| ***sfi-RNTI***RNTI used for SFI on the given cell (see TS 38.213 [13], clause 11.1.1). |
| ***slotFormatCombToAddModList***A list of SlotFormatCombinations for the UE's serving cells (see TS 38.213 [13], clause 11.1.1). |
| ***switchTriggerToAddModList, switchTriggerToAddModListSizeExt***A list of *SearchSpaceSwitchTrigger* objects. Each *SearchSpaceSwitchTrigger* object provides position in DCI of the bit field indicating search space switching flag for a serving cell or, if *cellGroupsForSwitchList* is configured, group of serving cells (see TS 38.213 [13], clause 10.4). If *cellGroupsForSwitchList* is configured, only one of the cells belonging to the same cell group is added/modified, and the configuration applies to all cells belonging to the *cellGroupsForSwitchList* (see TS 38.213 [13], clause 10.4). The network configures more than 4 *SearchSpaceSwitchTrigger* objects only if *cellGroupsForSwitchList* is not configured. The UE shall consider entries in *switchTriggerToAddModList* and in *switchTriggerToAddModListSizeExt* as a single list, i.e. an entry created using *switchTriggerToAddModList* can be modifed using *switchTriggerToAddModListSizeExt* and vice-versa. |
| ***switchTriggerToReleaseModList, switchTriggerToReleaseListSizeExt***A list of *SearchSpaceSwitchTriggers* to be released. If *cellGroupsForSwitchList* is configured, the *SearchSpaceSwitchTrigger* is released for all serving cells belonging to the same *CellGroupForSwitch*. The UE shall consider entries in *switchTriggerToReleaseList* and in *switchTriggerToReleaseListSizeExt* as a single list, i.e. an entry created using *switchTriggerToAddModList* or *switchTriggerToAddModListSizeExt* can be deleted using *switchTriggerToReleaseList* or *switchTriggerToReleaseListSizeExt*. |

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| *AvailableRB-SetsPerCell* field descriptions |
| ***positionInDCI***The (starting) position of the bits within DCI payload indicating the availability of the RB sets of a serving cell (see TS 38.213 [13], clause 11.1.1). |
| ***servingCelIId***The ID of the serving cell for which the configuration is applicable. |

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| *CO-DurationsPerCell* field descriptions |
| ***co-DurationList***A list of Channel Occupancy duration in symbols.The maximum duration that can be configured for the following SCS:- 15 kHz: 280.- 30 kHz: 560.- 60 kHz: 1120.- 120 kHz: 560.- 480 kHz: 2240.- 960 kHz: 4480. |
| ***positionInDCI***Position in DCI of the bit field indicating Channel Occupancy duration for UE's serving cells (see TS 38.213 [13], clause 11.1.1). |
| ***servingCelIId***The ID of the serving cell for which the configuration is applicable. |
| ***subcarrierSpacing***Reference subcarrier spacing for the list of Channel Occupancy durations (see TS 38.213 [13], clause 11.1.1). Only the following values are applicable depending on the used frequency range:FR1: 15, 30, or 60 kHzFR2-2: 120, 480, or 960 kHz |

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| *SearchSpaceSwitchTrigger* field descriptions |
| ***positionInDCI***The position of the bit within DCI payload containing a search space switching flag (see TS 38.213 [13], clause 11.1.1). |
| ***servingCellId***The ID of the serving cell for which the configuration is applicable or the group of serving cells as indicated by *CellGroupsForSwitch-r16* containing this *servingCellId*. |