**3GPP TSG-RAN WG2 Meeting #111-e *R2-200xxxx***

**E-meeting, 17th – 28th August 2020**

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| *CR-Form-v11.2* |
| **CHANGE REQUEST** |
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|  | **38.331** | **CR** | **1751** | **rev** | **1** | **Current version:** | **16.1.0** |  |
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| *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:***  | CR to clarify UE behaviour after TAT expiry due to reconfigurationWithSync |
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| ***Source to WG:*** | ZTE Corporation, Sanechips,  |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_newRAT-Core |  | ***Date:*** | 2020-07-28 |
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| ***Category:*** | **A** |  | ***Release:*** | Rel-16 |
|  | *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-12 (Release 12)Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | According to TS 38.331 ASN.1, for PUCCH-CSI, SRS and SR resource configuration, the fields or parent fields are all defined as “optional, --Need M” or “toAddModList”, this can be interpretated as delta signalling is supported for these dedicated configurations.

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| *PUCCH-CSI-resource*CSI-MeasConfig ::= SEQUENCE { \*\*\*ignore non-related part\*\*\* csi-ReportConfigToAddModList SEQUENCE (SIZE (1..maxNrofCSI-ReportConfigurations)) OF CSI-ReportConfig OPTIONAL, -- Need N csi-ReportConfigToReleaseList SEQUENCE (SIZE (1..maxNrofCSI-ReportConfigurations)) OF CSI-ReportConfigId OPTIONAL, -- Need N}CSI-ReportConfig ::= SEQUENCE { \*\*\*ignore non-related part\*\*\* reportConfigType CHOICE { periodic SEQUENCE { reportSlotConfig CSI-ReportPeriodicityAndOffset, pucch-CSI-ResourceList SEQUENCE (SIZE (1..maxNrofBWPs)) OF PUCCH-CSI-Resource }, semiPersistentOnPUCCH SEQUENCE { reportSlotConfig CSI-ReportPeriodicityAndOffset, pucch-CSI-ResourceList SEQUENCE (SIZE (1..maxNrofBWPs)) OF PUCCH-CSI-Resource }, \*\*\*ignore non-related part\*\*\* },}*SR resource*PUCCH-Config ::= SEQUENCE { \*\*\*ignore non-related part\*\*\* schedulingRequestResourceToAddModList SEQUENCE (SIZE (1..maxNrofSR-Resources)) OF SchedulingRequestResourceConfig  OPTIONAL, -- Need N schedulingRequestResourceToReleaseList SEQUENCE (SIZE (1..maxNrofSR-Resources)) OF SchedulingRequestResourceId OPTIONAL, -- Need N \*\*\*ignore non-related part\*\*\* ...}*SRS resource*BWP-UplinkDedicated ::= SEQUENCE { \*\*\*ignore non-related part\*\*\* srs-Config SetupRelease { SRS-Config } OPTIONAL, -- Need M \*\*\*ignore non-related part\*\*\* ...} |

However, if RRCReconfiguration message includes reconfigurationWithSync, based on current 38.331, the UE will reset MAC entity.

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| 5.3.5.5.2 Reconfiguration with syncThe UE shall perform the following actions to execute a reconfiguration with sync.…1> reset the MAC entity of this cell group;… |

Then base on the description in TS 38.321, the UE will consider TAT timer expiries upon MAC reset. And notify RRC to release PUCCH and SRS for all serving cells.

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| 5.12 MAC ResetIf a reset of the MAC entity is requested by upper layers, the MAC entity shall:…1> consider all *timeAlignmentTimer*s as expired and perform the corresponding actions in clause 5.2;…5.2 Maintenance of Uplink Time Alignment…1> when a *timeAlignmentTimer* expires:2> if the *timeAlignmentTimer* is associated with the PTAG:3> flush all HARQ buffers for all Serving Cells;3> notify RRC to release PUCCH for all Serving Cells, if configured;3> notify RRC to release SRS for all Serving Cells, if configured;… |

And then based on the clause 5.3.12 in 38.331, the UE is going to release PUCCH-CSI, SR, SRS resources upon receiving the PUCCH release request and SRS release request from lower layers.

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| 5.3.12 UE actions upon PUCCH/SRS release requestUpon receiving a PUCCH release request from lower layers, for all bandwidth parts of an indicated serving cell the UE shall:1> release PUCCH-CSI-Resources configured in *CSI-ReportConfig*;1> release *SchedulingRequestResourceConfig* instances configured in *PUCCH-Config*.Upon receiving an SRS release request from lower layers, for all bandwidth parts of an indicated serving cell the UE shall:1> release *SRS-Resource* instances configured in *SRS-Config*. |

Thus, based on above analysis, it can be understood that for reconfigurationWithSync, dela signalling is not supported for these dedicated configurations. But these are not clearly captured in the field description and ASN.1 part, which may cause misunderstanding. Look into LTE spec, we have added the below note in TS36.331, it clearly specifies that for handover case, the UE will revert those configurations to default values.

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| NOTE 1: During handover, the UE performs a MAC reset, which involves reverting to the default CQI/ SRS/ SR configuration in accordance with clause 5.3.13 and TS 36.321 [6], clauses 5.9 and 5.2. Hence, for these parts of the dedicated radio resource configuration, the default configuration (rather than the configuration used in the source PCell) is used as the basis for the delta signalling that is included in the message used to perform handover. |

So for NR spec, although the UE is not supposed to revert back to default configuration (according to 5.3.12), it is highly recommended to highlight that delta signalling is not supported for those configurations upon reconfigurationWithSync, so we suggest to capture a similar note in spec to avoid any misunderstanding.  |
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| ***Summary of change:*** | 1. Adding a note in 6.3.2, clarify that during reconfigurationWithSync procedure, the UE will release PUCCH-CSI, SRS and SR resource configuration, thus delta signalling is not supported for these dedicated configuration upon reconfigurationWithSync.

**Impact analysis**Impacted 5G architecture options:NR SA, (NG)EN-DC, NE-DC, NR-DCImpacted functionality:ReconfigurationWithSyncInter-operability: 1. If UE implementates according to the CR and the network is not, if network determines the support of delta signalling based on the need code and ASN.1 design, then it may result in reconfiguration failure when network triggers delta configuration on PUCCH-CSI/SRS/SR fields during reconfigurationWithSync.
2. If the network implementates according to the CR and the UE is not, there is no inter-operability issue because network will anyway provides new dedicated PUCCH-CSI/SRS/SR configurations during reconfigurationWithSync.
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| ***Consequences if not approved:*** | Upon reconfigurationWithSync, for PUCCH-CSI/SRS/SR resources, the need codes and ASN.1 design of those fields cause misunderstanding that delta signalling is supported.  |
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| ***Clauses affected:*** | 6.3.2 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** | **x** |  |  Other core specifications  | TS 38.331 CR1750 |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | CR  |
|  |  |
| ***Other comments:*** |  |

Start of changes

### 6.3.2 Radio resource control information elements

\*\*\*\* ignore non-related part \*\*\*\*

– *BWP-UplinkDedicated*

The IE *BWP-UplinkDedicated* is used to configure the dedicated (UE specific) parameters of an uplink BWP.

***BWP-UplinkDedicated* information element**

-- ASN1START

-- TAG-BWP-UPLINKDEDICATED-START

BWP-UplinkDedicated ::= SEQUENCE {

 pucch-Config SetupRelease { PUCCH-Config } OPTIONAL, -- Need M

 pusch-Config SetupRelease { PUSCH-Config } OPTIONAL, -- Need M

 configuredGrantConfig SetupRelease { ConfiguredGrantConfig } OPTIONAL, -- Need M

 srs-Config SetupRelease { SRS-Config } OPTIONAL, -- Need M

 beamFailureRecoveryConfig SetupRelease { BeamFailureRecoveryConfig } OPTIONAL, -- Cond SpCellOnly

 ...,

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 sl-PUCCH-Config-r16 SetupRelease { PUCCH-Config } OPTIONAL, -- Need M

 cp-ExtensionC2-r16 INTEGER (1..28) OPTIONAL, -- Need R

 cp-ExtensionC3-r16 INTEGER (1..28) OPTIONAL, -- Need R

 useInterlacePUCCH-PUSCH-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 pucch-ConfigurationList-r16 SetupRelease { PUCCH-ConfigurationList-r16 } OPTIONAL, -- Need M

 lbt-FailureRecoveryConfig-r16 SetupRelease { LBT-FailureRecoveryConfig-r16 } OPTIONAL, -- Need M

 configuredGrantConfigToAddModList-r16 ConfiguredGrantConfigToAddModList-r16 OPTIONAL, -- Need N

 configuredGrantConfigToReleaseList-r16 ConfiguredGrantConfigToReleaseList-r16 OPTIONAL, -- Need N

 configuredGrantConfigType2DeactivationStateList-r16 ConfiguredGrantConfigType2DeactivationStateList-r16 OPTIONAL -- Need R

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}

ConfiguredGrantConfigToAddModList-r16 ::= SEQUENCE (SIZE (1..maxNrofConfiguredGrantConfig-r16)) OF ConfiguredGrantConfig

ConfiguredGrantConfigToReleaseList-r16 ::= SEQUENCE (SIZE (1..maxNrofConfiguredGrantConfig-r16)) OF ConfiguredGrantConfigIndex-r16

ConfiguredGrantConfigType2DeactivationState-r16 ::= SEQUENCE (SIZE (1..maxNrofConfiguredGrantConfig-r16)) OF ConfiguredGrantConfigIndex-r16

ConfiguredGrantConfigType2DeactivationStateList-r16 ::=

 SEQUENCE (SIZE (1..maxNrofCG-Type2DeactivationState)) OF ConfiguredGrantConfigType2DeactivationState-r16

-- TAG-BWP-UPLINKDEDICATED-STOP

-- ASN1STOP

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| ***BWP-UplinkDedicated* field descriptions** |
| ***beamFailureRecoveryConfig***Configuration of beam failure recovery. If *supplementaryUplink* is present, the field is present only in one of the uplink carriers, either UL or SUL. |
| ***configuredGrantConfig***A *Configured-Grant* of *type1* or *type2*. It may be configured for UL or SUL but in case of *type1* not for both at a time. Except for reconfiguration with sync, the NW does not reconfigure *configuredGrantConfig* when there is an active configured uplink grant Type 2 (see TS 38.321 [3]). However, the NW may release the *configuredGrantConfig* at any time. This field cannot be configured simultanesouly with *configuredGrantConfigToAddModList.* |
| ***configuredGrantConfigToAddModList***Indicates a list of one or more configured grant configurations to be added or modified for one BWP. Except for reconfiguration with sync, the NW does not reconfigure a Type 2 configured grant configuration when it is active (see TS 38.321 [3]). However, the NW may release a configured grant configuration at any time. |
| ***configuredGrantConfigToReleaseList***Indicates a list of one or more UL Configured Grant configurations to be released. |
| ***configuredGrantConfigType2DeactivationStateList***Indicates a list of the deactivation states in which each state can be mapped to a single or multiple Configured Grant type 2 configurations to be deactivated when the corresponding deactivation DCI is received, see clause 7.3.1 in TS 38.212 [17] and clause 6.1 in TS 38.214 [19]. |
| ***cp-ExtensionC2, cp-ExtensionC3***Configures the cyclic prefix (CP) extension (see TS 38.211 [16], clause 5.3.1). For 15 and 30 kHz SCS, {1..28} are valid for both *cp-ExtensionC2* and *cp-ExtensionC3*. For 30 kHz SCS, {1..28} are valid for *cp-ExtensionC2* and {2..28} are valid for *cp-ExtensionC3.* For 60 kHz SCS, {2..28} are valid for *cp-ExtensionC2* and {3..28} are valid for *cp-ExtensionC3*. |
| ***lbt-FailureRecoveryConfig***Configures parameters used for detection of consistent uplink LBT failures for operationwith shared spectrum channel access, as specified in TS 38.321 [3]. |
| ***pucch-Config***PUCCH configuration for one BWP of the normal UL or SUL of a serving cell. If the UE is configured with SUL, the network configures PUCCH only on the BWPs of one of the uplinks (normal UL or SUL). The network configures *PUCCH-Config* at least on non-initial BWP(s) for SpCell and PUCCH SCell. If supported by the UE, the network may configure at most one additional SCell of a cell group with *PUCCH-Config* (i.e. PUCCH SCell).In (NG)EN-DC and NE-DC, the NW configures at most one serving cell per frequency range with PUCCH. In (NG)EN-DC and NE-DC, if two PUCCH groups are configured, the serving cells of the NR PUCCH group in FR2 use the same numerology. For NR-DC, the maximum number of PUCCH groups in each cell group is one, and only the same numerology is supported for the cell group with carriers only in FR2.The NW may configure PUCCH for a BWP when setting up the BWP. The network may also add/remove the *pucch-Config* in an *RRCReconfiguration* with *reconfigurationWithSync* (for SpCell or PUCCH SCell) or with SCell release and add (for PUCCH SCell) to move the PUCCH between the UL and SUL carrier of one serving cell. In other cases, only modifications of a previously configured *pucch-Config* are allowed.If one (S)UL BWP of a serving cell is configured with PUCCH, all other (S)UL BWPs must be configured with PUCCH, too. |
| ***pucch-ConfigurationList***PUCCH configurations for two simultaneously constructed HARQ-ACK codebooks (see TS 38.213 [13], clause 9.1). Different PUCCH Resource IDs are configured in different *PUCCH-Config* within the *pucch-ConfigurationList* if configured. |
| ***pusch-Config***PUSCH configuration for one BWP of the normal UL or SUL of a serving cell. If the UE is configured with SUL and if it has a *PUSCH-Config* for both UL and SUL, an UL/SUL indicator field in DCI indicates which of the two to use. See TS 38.212 [17], clause 7.3.1. |
| ***sl-PUCCH-Config***Indicates the UE specific PUCCH configurations used for the HARQ-ACK feedback reporting for NR sidelink communication. |
| ***srs-Config***Uplink sounding reference signal configuration. |
| ***useInterlacePUCCH-PUSCH***If the field is present, the UE uses uplink frequency domain resource allocation Type 2 for PUSCH (see 38.213 clause 8.3 and 38.214 clause 6.1.2.2) and uses interlaced PUCCH Format 0, 1, 2, and 3 for PUCCH (see TS 38.213 [13], clause 9.2.1). |

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| **Conditional Presence** | **Explanation** |
| *SpCellOnly* | The field is optionally present, Need M, in the *BWP-UplinkDedicated* of an SpCell. It is absent otherwise.  |

NOTE 1: In case of *RRCReconfiguration* with *reconfigurationWithSync*, the UE performs a MAC reset, which involves releasing the PUCCH-CSI/SRS/SR configuration in accordance with clause 5.3.12 and TS 38.321 [6], clauses 5.12 and 5.2. Hence, for these parts of the dedicated radio resource configuration, delta signalling is not supported in the message when *reconfigurationWithSync* is included.

End of changes