**3GPP TSG-RAN WG2 Meeting #110e R2-200xxxx**

**1-12 June 2020**

**Agenda item: 6.13.3**

**Source: Ericsson**

**Title: [AT110-e][507][2s RA] CP and ASN.1 Issues (Ericsson))**

**Document for: Discussion and decision**

# Introduction

This document will capture the open issues and suggested solutions identified during the following email discussion:

* [AT110-e][507][2s RA] CP and ASN.1 Issues (Ericsson)

Scope:

* + - Identify/Summarize all remaining/identified CP and ASN.1 issues

 Intended outcome:

* + - Set of proposals to agree by email
		- CR capturing agreements from week1 and then week2

 Deadline for providing comments:

* + - Companies input: June 5th
		- Rapporteur proposals: June 6th

CR capturing agreements: versions are provided as soon agreements are made

**🡪 For any remaining WI specific issues that don’t have an associated RIL#, add also a RIL comment to the ASN.1 file.**

**New items for continued discussion can be found in section 3**

# Open issues/RIL for 2-Step RA NR RRC Phase 2 – handled, report in R2-2005302

| **ID** | **Class**  | **IE name** | **Subclause** | **Description** | **Correction** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- |
| O911 | 2 | MsgA-ConfigCommon | 6.3.2 | Field name: msgA-PUSCH-ConfigAccording to RAN1 CR, msgA-PUSCH-config can be absent for non-initial UL BWP and the corresponding parameters provided on initial UL BWP can be reused. However, RAN2 has agreed to specify that msgA PRACH and payload should be either absent or present at the same time and the structure has been changed correspondingly. As a result, msgA-PUSCH-config will always be present once 2-step RA is configured and the behaviour defined in RAN1 spec will never happen. Misalignment between specs.38.213 CR A UE determines time resources and frequency resources for PUSCH occasions in an active UL BWP from *msgA-PUSCH-config* for the active UL BWP. If the active UL BWP is not the initial UL BWP and *msgA-PUSCH-config* is not provided for the active UL BWP, the UE uses the *msgA-PUSCH-config* provided for the initial UL BWP. 38.331 CRMsgA-ConfigCommon-r16 ::= SEQUENCE { rach-ConfigCommonTwoStepRA-r16 RACH-ConfigCommonTwoStepRA-r16, msgA-PUSCH-Config-r16 MsgA-PUSCH-Config-r16} | Proposed CR:MsgA-ConfigCommon-r16 ::= SEQUENCE { rach-ConfigCommonTwoStepRA-r16 RACH-ConfigCommonTwoStepRA-r16, msgA-PUSCH-Config-r16 MsgA-PUSCH-Config-r16—OPTIOANL,--Cond initialBWPConfig}***msgA-PUSCH-Config***Configuration of cell-specific MsgA PUSCH parameters which the UE uses for contention-based MsgA PUSCH transmission of this BWP. If the field is not configured for the selected UL BWP, the UE shall use the MsgA PUSCH configuration of initial UL BWP.[ZTE]Agree | **Rapporteur: ConcAgree2** |
| O912 | 2 | *MsgA-PUSCH-Config* | 6.3.2 | Field name: msgA-PUSCH-ResourceGroupAIf O911 is agreed, msgA-PUSCH-Config is defined as ‘OPTIOANL Cond InitialBWPConfig’ and UE behavior is specified when this field is absent. The conditional presence code for msgA-PUSCH-ResourceGroupA and the descriptions regarding reusing the PUSCH configuration in initial UL BWP can be removed since they are included in msgA-PUSCH-Config.  | MsgA-PUSCH-Config-r16 ::= SEQUENCE {  msgA-PUSCH-ResourceGroupA-r16 MsgA-PUSCH-Resource-r16  msgA-PUSCH-ResourceGroupB-r16 MsgA-PUSCH-Resource-r16 OPTIONAL, -- Cond GroupBConfigured msgA-TransmformPrecoder-r16 ENUMERATED {enabled, disabled} OPTIONAL, -- Need R msgA-DataScramblingIndex-r16 INTEGER (0..1023) OPTIONAL, -- Need S msgA-DeltaPreamble-r16 INTEGER (-1..6) OPTIONAL -- Need R}***msgA-PUSCH-ResourceGroupA***MsgA PUSCH resources that the UE shall use when performing MsgA transmission using preambles group A. ***msgA-PUSCH-ResourceGroupB***MsgA PUSCH resources that the UE shall use when performing MsgA transmission using preambles group B. [ZTE] Even the O911 is agreed, it is still possible for the other BWP to have different MsgA-PUSCH-Config but have the same msgA-PUSCH-ResourceGroupA (e.g.there is no group B on initial BWP but there is group B on the other BWP). Therefore, we think we can keep the description for msgA-PUSCH-ResourceGroupA as it is.For msgA-PUSCH-ResourceGroupB, it depends on whether we should stick to the condition and make the IE mandatory for the case group B is configured. If we stick to the description in condition, then we agree the change proposed.  | **Rappoerteur: ConcReject2.**The signaling in the agreed baseline support a configuartion using different parameters in MsgA-PUSCH-Config-r16 in the non-initial UL BWP than in the initial UL BWP. The proposal does not adress a error as such, but is a functional change. |
| O913 | 2 | *MsgA-PUSCH-Config* | 6.3.2 | Field name: *msgA-TransmformPrecoder*Agreement: msgA-TransmformPrecoder and msgA-DeltaPreamble-r16 are changed to Optional Need R.As UE bahaviour when msgA-TransmformPrecoder is absent /not configured is specified in RAN1 spec, it is agreed to change the field to Optional Need R in last meeting. Correspondingly, the sentence ‘If the parameter is not configured, the UE shall follow the parameter msg3-TransformPrecoder of 4-step type RA for the configured BWP for msgA PUSCH if 4-step type RA is configured (i.e if the msg3-Transform-Precoderis included then it shall be enabled, else disabled’ should be removed from field description. | ***msgA-TransformPrecoder***Enables or disables the transform precoder for MsgA transmission (see clause 6.1.3 of TS 38.214 [19]).[ZTE] Agree | **Rapporteur: ConcAgree2** |
| O914 | 2 | *MsgA-PUSCH-Config* | 6.3.2 | Field name: *msgA-PUSCH-TimeDomainAllocation*Agreement: Time domain resource allocation can also be provided through PUSCH-Config if provided (CFRA); 2) Clarification for the absence of PUSCH-TimeDomainAllocation.#1*MsgA-PUSCH-TimeDomainAllocation* is optional present with need code S, but UE behaviour is not specified when the field is absent in current CR. We think this field should be mandatory present as there is no default value defined in RAN1/RAN2 specs. #2 We should further check whether TDRA list provided in PUSCH-Config can be used for CFRA. If it is supported, we should further clarify which one to choose when TDRA lists are available in both PUSCH-Config and PUSCH-ConfigCommon. But we think whether the TDRA List in PUSCH-Config can be used depends on whether the resource pool for CFRA is common or dedicated. If it is common, TDRA list in PUSCH-ConfigCommon should be applied for time alignment among UEs. We can keep it like this and fix it if needed after we have concesus on PRU allocation for CFRA. | Change msgA-PUSCH-TimeDomainAllocation to be mandatory present. Remove the ‘OPTIONAL Need S’ code.MsgA-PUSCH-Resource-r16 ::= SEQUENCE { msgA-PUSCH-TimeDomainAllocation-r16 INTEGER (1..maxNrofUL-Allocations)  startSymbolAndLengthMsgA-PO-r16 INTEGER (0..127) OPTIONAL, -- Need S[ZTE]We think the use of *msgA-PUSCH-TimeDomainAllocation is clearly specified in* *6.1.2.1.1 of 38.214 (e.g. in which case the msgA-PUSCH-TimeDomainAllocation configured in PUSCH-ConfigCommon or PUSCH-Config will be used). Maybe a reference to 38.214 is sufficient.* For example*“Indicates a combination of start symbol and length and PUSCH mapping type from the TDRA table (PUSCH-TimeDomainResourceAllocationList if provided in PUSCH-ConfigCommon, or in PUSCH-Config, or else the default Table 6.1.2.1.1-2 in 38.214 [19 ]) is used if PUSCH-TimeDomainResourceAllocationList is not provided in PUSCH-ConfigCommon or in PUSCH-Config (see TS 38.214 [19], clause 6.1.2.1.1).”*Ericsson:Agree that msgA-PUSCH-TimeDomainAllocation should be mandatory, but change the field description of msgA-PUSCH-TimeDomainAllocation to:“Indicates a combination of start symbol and length and PUSCH mapping type from the TDRA table (*PUSCH-TimeDomainResourceAllocationList* if provided in *PUSCH-ConfigCommon* or in *PUSCH-Config* (as described in clause 6.1.2.1.1 in TS 38.214 [19]or else the default Table 6.1.2.1.1-2 in 38.214 [19] is used if *msgA-PUSCH-TimeDomainAllocation* is not provided in PUSCH-ConfigCommon or in *PUSCH-Config*).” | **Rapporteur:** **1) ConcReject2:** Mandatory presence of *msgA-PUSCH-TimeDomainAllocation.*The correction proposal leads to that the mandatory presence needs to be clarified (ignore) similarly to the current possibility of absence of an optional paramteter, i.e a smaller change is to clarify the existing notation.2) **ConcAgree2:** Clarification of use of TDRA list is solved by adding a reference to 38.214:“Indicates a combination of start symbol and length and PUSCH mapping type from the TDRA table (*PUSCH-TimeDomainResourceAllocationList* if provided in *PUSCH-ConfigCommon* or in *PUSCH-Config* (as described in clause 6.1.2.1.1 in TS 38.214 [19] or else the default Table 6.1.2.1.1-2 in 38.214 [19] is used if *msgA-PUSCH-TimeDomainAllocation* is not provided in PUSCH-ConfigCommon or in *PUSCH-Config*).” |
| O915 | 2 | *MsgA-PUSCH-Config* | 6.3.2 | Field name: *startSymbolAndLengthMsgA-PO*If O914 is agreed to change *MsgA-PUSCH-TimeDomainAllocation* as a mandatory present field, we should clarify which one to follow when both *MsgA-PUSCH-TimeDomainAllocation* and *startSymbolAndLengthMsgA-PO* are available. Propose to speciy that UE shall ignore the value in *MsgA-PUSCH-TimeDomainAllocation* when *startSymbolAndLengthMsgA-PO* is configured. |

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| ***startSymbolAndLengthMsgA-PO***An index giving valid combinations of start symbol, length and mapping type as start and length indicator (SLIV) for the first msgA PUSCH occasion, for RRC\_CONNECTED UEs in non-initial BWP as described in TS 38.214 [19] clause 6.1.2. The network configures the field so that the allocation does not cross the slot boundary. The number of occupied symbols excludes the guard period. If the field is absent, the UE shall use the value in *msgA-PUSCH-TimeDomainAllocation* (see TS 38.213 [13], clause 8.1A). Otherwise, the UE shall ignore the value in *msgA-PUSCH-TimeDomainAllocation.* |

Specify that UE shall ignore msgA-PUSCH-TimeDomainAllocation when startSymbolAndLengthMsgA-PO is configured.[ZTE] See above | **Rapporteur: ConcReject2**The sentence is clear on that IF the field is absent, the UE shall use the value in startSymbolAndLengthMsgA-PO. For clarity add a sentence:“The NW configures only one of MsgA-PUSCH-TimeDomainAllocation and startSymbolAndLengthMsgA-PO.” |
| O916 | 2 | *RACH-ConfigCommonTwoStepRA* | 6.3.2 | Field name: *msgA-SubcarrierSpacing*The field description of *msgA-SubcarrierSpacing* is inconsistent with its conditionl presence code *2StepOnlyL139*. It is ambiguous when *msgA-SubcarrierSpacing* should be mandatory present according to the text highlighted.

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| **Conditional Presence** | **Explanation** |
| *2StepOnlyL139* | The field is mandatory present if *prach-RootSequenceIndex* L=139 and no 4-step random access type is configured, otherwise the field is absent, Need S. |

 ***msgA-SubcarrierSpacing***Subcarrier spacing of PRACH (see TS 38.211 [16], clause 5.3.2). Only the values 15 or 30 kHz (FR1), and 60 or 120 kHz (FR2) are applicable. The field is only present in case of 2-step only BWP, otherwise the UE applies the SCS as derived from the *msgA-PRACH-ConfigurationIndex* in *RACH-ConfigGenericTwoStepRA* in the configured BWP (see tables Table 6.3.3.1-1 and Table 6.3.3.2-2, TS 38.211 [16]). The value also applies to contention free 2-step random access type (*RACH-ConfigDedicated*). This field is only configured for the case of separate ROs between 2-step and 4-step type random access. | Propose to change the field description and conditional presence code as follows:***msgA-SubcarrierSpacing***Subcarrier spacing of PRACH (see TS 38.211 [16], clause 5.3.2). Only the values 15 or 30 kHz (FR1), and 60 or 120 kHz (FR2) are applicable. If the field is absent, the UE applies the SCS as derived from the *msgA-PRACH-ConfigurationIndex* in *RACH-ConfigGenericTwoStepRA* in the configured BWP (see tables Table 6.3.3.1-1 and Table 6.3.3.2-2, TS 38.211 [16]). The value also applies to contention free 2-step random access type (*RACH-ConfigDedicated*). The network is not expected to configure *msgA-SubcarrierSpacing* within this field for case of shared RO between 2-step and 4-step type random access.

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| **Conditional Presence** | **Explanation** |
| *2StepL139* | The field is mandatory present if *prach-RootSequenceIndex* L=139 and no 4-step random access type is configured or 2-step RA and 4-step RA separate ROs, otherwise the field is absent, Need S. |

[ZTE]Based on the agreement made in RAN1 that “For separately configured ROs, the 2-step RACH MsgA PRACH SCS is indicated by the corresponding 4-step RACH parameter (msg1-subcarrierSpacing).”, we think current condition is correct, and the field description shall be revised to:“Subcarrier spacing of PRACH (see TS 38.211 [16], clause 5.3.2). Only the values 15 or 30 kHz (FR1), and 60 or 120 kHz (FR2) are applicable. The field is only present in case of 2-step only BWP, otherwise the UE applies the SCS as derived from the msg1-SubcarrierSpacing in RACH-ConfigCommon. The value also applies to contention free 2-step random access type (RACH-ConfigDedicated).” | **Rapporteur: ConcReject2**Based on the agreement listed the text need to be corrected. The proposal from ZTE seems to cover this.**ProAgree2:** Change fied description to state “The field is only present in case of 2-step only BWP, otherwise the UE applies the SCS as derived from the msg1-SubcarrierSpacing in RACH-ConfigCommon” |
| O917 | 2 | *RACH-ConfigCommonTwoStepRA* | 6.3.2 | Field name: *2StepSUL*Agreement: Merge the two IEs “msgA-RSRP-Threshold-r16” and “msgA-RSRP-ThresholdSUL-r16” into using a single msgA-RSRP-Threshold-r16Remove redundant parameter msgA-RSRP-ThresholdSSB-SUL.msgA-RSRP-ThresholdSUL-r16 and msgA-RSRP-ThresholdSSB-SUL are agreed to be removed. The conditional presence code for these two parameters should be removed correspondingly. | Remove field description of 2StepSUL

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| Conditional Presence | Explanation |
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[ZTE] Agree | **Rapporteur: ConcAgree2** |
| O918 | 2 | *RACH-ConfigCommonTwoStepRA* | 6.3.2 | Field name: *GroupB-ConfiguredTwoStepRA*#1 In our understanding, if preamble group B is configured, all three parameters included in *GroupB-ConfiguredTwoStepRA* should be mandatory present. Remove ‘OPTIONAL Cond GroupBConfig’ for *numberofRA-PreamblesGroupA.*#2 *GroupB-ConfiguredTwoStepRA* can be optional present and released by UE if it is absent.  | GroupB-ConfiguredTwoStepRA-r16 ::= SEQUENCE { ra-MsgA-SizeGroupA ENUMERATED {b56, b144, b208, b256, b282, b480, b640, b800, b1000, b72, spare6, spare5, spare4, spare3, spare2, spare1}  messagePowerOffsetGroupB ENUMERATED {minusinfinity, dB0, dB5, dB8, dB10, dB12, dB15, dB18}  numberofRA-PreamblesGroupA INTEGER (1..64) } OPTIONAL, Cond R[ZTE] Agree[vivo] We agree with OPPO’s intentions. However, this is a typo and redundancy in the text proposal. Thus, we suggest that:groupB-ConfiguredTwoStepRA-r16 GroupB-ConfiguredTwoStepRA-r16 OPTIONAL, -- Need RGroupB-ConfiguredTwoStepRA-r16 ::= SEQUENCE { ra-MsgA-SizeGroupA ENUMERATED {b56, b144, b208, b256, b282, b480, b640, b800, b1000, b72, spare6, spare5, spare4, spare3, spare2, spare1}  messagePowerOffsetGroupB ENUMERATED {minusinfinity, dB0, dB5, dB8, dB10, dB12, dB15, dB18}  numberofRA-PreamblesGroupA INTEGER (1..64) } | **Rapporteur:** **ConcAgree2** |

| S 505 | 2 | MsgA-PUSCH-Config-r16 | 6.3.2 | Field Name: msgA-PUSCH-ResourceGroupB-r16Field Description: MsgA PUSCH resources that the UE shall use when performing MsgA transmission using preambles group B. If field is not configured for the selected UL BWP, the UE shall use the MsgA PUSCH configuration for group B when performing MsgA transmission using group B.1. According to endorsed CR (R2-2004288), the field msgA-PUSCH-ResourceGroupB-r16 is mandatory present if group B is configured. So the highlighted text does not make sense and should be removed.2. According to endorsed CR (R2-2004288), If msgA-PUSCH-ResourceGroupA-r16 is not configrued in non intial BWP, UE uses the corresponding configuration from initial BWP. It is not clear why the same is not allowed for msgA-PUSCH-ResourceGroupB-r16.  | ***Changes if Comment #2 is NOT agreed******msgA-PUSCH-ResourceGroupB***MsgA PUSCH resources that the UE shall use when performing MsgA transmission using preambles group B. ***Changes if Comment #2 is agreed******msgA-PUSCH-ResourceGroupB***MsgA PUSCH resources that the UE shall use when performing MsgA transmission using preambles group B. If group B is configured for the selected UL BWP and this field is not configured for the selected UL BWP, the UE shall use the MsgA PUSCH configuration for group B of initial UL BWPmsgA-PUSCH-ResourceGroupB-r16 MsgA-PUSCH-Resource-r16 OPTIONAL, -- Cond InitialBWPConfig. [ZTE] We are fine with either one.If we agree the O911, we have slight preference on alternative 1, which is simpler and sufficient.[vivo] We prefer alternative 2. This is because, based on the RAN1 agreement, MsgA PUSCH configuration for preamble groupB is not mandatorily required to be present in a non-initial BWP.  | **Rapporteur: ConcAgree2 Comment 2**: The alternative clarifies the agreed signaling options as captured in the baseline CR. Together with the proposal in O911, there should not be any ambiguity. |
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| S 506 | 3 | RACH-ConfigGenericTwoStepRA-r16 | 6.3.2 | RAN2 Agreement: msgA-TransMax is configured for 2 step CFRA in rachConfigDedicated and that the UE is not allowed to switch to 4-step RACH if this is not configured in rachConfigDedicatedmsgA-TransMax is included in RACH-ConfigGenericTwoStepRA. So according to endorsed CR (R2-2004288), msgA-TransMax can only be configured if network wants to configure separate PRACH occasions for 2 step CFRA as RACH-ConfigGenericTwoStepRA is included in RACH-ConfigDedicated only in that case. According to agreement, Network should be able to configure msgA-TransMax for 2 step CFRA in rachConfigDedicated irrespetive of whether separate RACH occasions for 2 step CFRA are configured or not.  | Remove parameter ' msgA-TransMax-r16' from RACH-ConfigGenericTwoStepRA and include in RACH-ConfigCommonTwoStepRA-r16.Also add msgA-TransMax in rachConfigDedicated (as shown below)CFRA-TwoStep-r16 ::= SEQUENCE { occasionsTwoStepRA-r16 SEQUENCE { rach-ConfigGenericTwoStepRA-r16 RACH-ConfigGenericTwoStepRA-r16, ssb-PerRACH-OccasionTwoStepRA-r16 ENUMERATED {oneEighth, oneFourth, oneHalf, one,  two, four, eight, sixteen} OPTIONAL -- Cond SSB-CFRA } OPTIONAL, -- Need S msgA-CFRA-PUSCH-r16 MsgA-PUSCH-Resource-r16,msgA-TransMax-r16 ENUMERATED {n1, n2, n4, n6, n8, n10, n20, n50, n100, n200} OPTIONAL, -- Need SresourcesTwoStep-r16 CHOICE { ssb SEQUENCE { ssb-ResourceList SEQUENCE (SIZE(1..maxRA-SSB-Resources)) OF CFRA-SSB-Resource, ra-ssb-OccasionMaskIndex INTEGER (0..15) }, csirs SEQUENCE { csirs-ResourceList SEQUENCE (SIZE(1..maxRA-CSIRS-Resources)) OF CFRA-CSIRS-Resource, rsrp-ThresholdCSI-RS RSRP-Range } }, ...}[ZTE]AgreeThe msgA-TransMax shall be added in both RACH-ConfigCommonTwoStepRA-r16 and CFRA-TwoStep-r16[vivo] we think the current text is okay as the msgA-TransMax can be provided via *rach-ConfigGenericTwoStepRA* within *CFRA-TwoStep* even when shared ROs are configured for 2-step CFRA, and the UE will not ignore the msgA-TransMax within *CFRA-TwoStep* based on the field description of *CFRA-TwoStep.*  | **Rapporteur:** **ConcAgree2**The proposal makes the configurability options clear according to the agreement. |
| H630 | 3 | 6.3.2 RACH-ConfigCommonTwoStepRA |  | groupB-ConfiguredTwoStepRA-r16 GroupB-ConfiguredTwoStepRA-r16 OPTIONAL, -- Need S | it should not be need S. "--Cond GroupBConfig should be put here[ZTE] Agree[vivo] We prefer to use “Need R” here, similarly to groupBconfigured (i.e. Need R) in Rel15 NR.  | **Rapporteur: ConcReject2**A correction to clarify that that the group B configuration parameter is present if group B is configured is not needed. |
| H631 | 3 |  |  | groupB-ConfiguredTwoStepRA field description:Preamble grouping for 2-step random access type. If the field is absent then there is only one preamble group configured and only one msgA PUSCH configuration. | " If the field is absent then there is only one preamble group configured and only one msgA PUSCH configuration." should be removed[ZTE]: the existing sentence is correct, we are not sure why we should remove it.  | **Rapporteur: ConcReject2** |
| H632 | 3 |  |  | GroupB-ConfiguredTwoStepRA-r16 ::= SEQUENCE { ra-MsgA-SizeGroupA ENUMERATED {b56, b144, b208, b256, b282, b480, b640, b800, b1000, b72, spare6, spare5, spare4, spare3, spare2, spare1} OPTIONAL, -- Need M messagePowerOffsetGroupB ENUMERATED {minusinfinity, dB0, dB5, dB8, dB10, dB12, dB15, dB18} OPTIONAL, -- Need M numberofRA-PreamblesGroupA INTEGER (1..64) OPTIONAL, --Cond GroupBConfig} | "--Cond GroupBConfig should be put on the level of groupB-ConfigredTwoStepRA[ZTE]Agree. similar as the O911.[vivo]We just need to remove the “OPTIONAL, --Cond GroupBConfig” tag here. | **Rapporteur:** **ConcReject2**Since the IE is inside the Group B config, the condition is not needed. The IE should be mandatory present with GroupB-ConfiguredTwoStepRA**ConcAgree2**: Remove “OPTIONAL, --Cond GroupBConfig” for numberofRA-PreamblesGroupA. |
| H633 | 3 | 6.3.2 RACH-COnfigCommonTwoStepRA |  | rach-ConfigGenericTwoStepRA-r16 RACH-ConfigCommonTwoStepRA-r16, | should be RACH-ConfigGenericTwoStepRA-r16[ZTE]: This was already fixed.  | **Rapporteur: ConcReject2** |
| H634 | 3 | 6.3.2 RACH-COnfigCommonTwoStepRA |  | msgA-RSRP-ThresholdSSB-SUL-r16 RSRP-Range OPTIONAL, -- Cond 2StepSUL | The field is not needed anymore. The field description has already been removed[ZTE]: This field description was also removed in latest CR.  | **Rapporteur: ConcReject2** |
| H635 | 3 | 6.3.2 RACH-COnfigCommonTwoStepRA |  | msgA-PRACH-RootSequenceIndexPRACH root sequence index. If the field is not configured, the UE applies the value in field prach-RootSequenceIndex in RACH-ConfigCommon in the configured BWP. When both 2-step and 4-step type random access is configured, this field is only configured for the case of separate ROs between 2-step and 4-step type random access.msgA-RestrictedSetConfigConfiguration of an unrestricted set or one of two types of restricted sets for 2-step random access type preamble. If the field is not configured, the UE applies the value in field restrictedSetConfig in RACH-ConfigCommon in the configured BWP. When both 2-step and 4-step type random access is configured, this field is only configured for the case of separate ROs between 2-step and 4-step type random access.msgA-SubcarrierSpacingSubcarrier spacing of PRACH (see TS 38.211 [16], clause 5.3.2). Only the values 15 or 30 kHz (FR1), and 60 or 120 kHz (FR2) are applicable. The field is only present in case of 2-step only BWP, otherwise the UE applies the SCS as derived from the msgA-PRACH-ConfigurationIndex in RACH-ConfigGenericTwoStepRA in the configured BWP (see tables Table 6.3.3.1-1 and Table 6.3.3.2-2, TS 38.211 [16]). The value also applies to contention free 2-step random access type (RACH-ConfigDedicated). This field is only configured for the case of separate ROs between 2-step and 4-step type random access. | this sentence should be added to the conditional presence tag. “When both 2-step and 4-step type random access is configured, this field is only configured for the case of separate ROs between 2-step and 4-step type random access.”[ZTE]Since the concerned IEs are conditional need S in condition, and the related description is already there in field description, current text seems fine for us.[vivo]There is no need to add the condition tag. This is because msgA-PRACH-RootSequenceIndex and msgA-RestrictedSetConfig are not mandatory for the case of separate ROs between 2-step and 4-step type random access. Moreover, msgA-SubcarrierSpacing is only needed for the 2-step only BWP. | **Rapporteur: ConcReject2**This is already in field descriptions. Moving it to the explanation of the conditional presence code would work, but it is not needed and wouldn’t change anything. |
| H636 | 3 | 6.3.2 RACH-ConfigGenericTwoStepRA |  | RACH-ConfigGenericTwoStepRA-r16 ::= SEQUENCE {msgA-PRACH-ConfigurationIndex-r16 INTEGER (0..262) OPTIONAL, -- Cond 2StepOnlymsgA-RO-FDM-r16 ENUMERATED {one, two, four, eight} OPTIONAL, -- Cond 2StepOnlymsgA-RO-FrequencyStart-r16 INTEGER (0..maxNrofPhysicalResourceBlocks-1) OPTIONAL, -- Cond 2StepOnlymsgA-ZeroCorrelationZoneConfig-r16 INTEGER (0..15) OPTIONAL, -- Cond 2StepOnlymsgA-PreamblePowerRampingStep-r16 ENUMERATED {dB0, Db2, Db4, Db6} OPTIONAL, -- Cond 2StepOnlymsgA-PreambleReceivedTargetPower-r16 INTEGER (-202..-60) OPTIONAL, -- Cond 2StepOnlymsgB-ResponseWindow-r16 ENUMERATED {sl1, sl2, sl4, sl8, sl10, sl20, sl40, sl80, sl160, sl320},preambleTransMax-r16 ENUMERATED {n3, n4, n5, n6, n7, n8, n10, n20, n50, n100, n200}, OPTIONAL, -- Cond 2StepOnlymsgA-TransMax-r16 ENUMERATED {n1, n2, n4, n6, n8, n10, n20, n50, n100, n200} OPTIONAL, -- Need R...}Conditional Presence Explanation2StepOnlyThe field is mandatory present if there are no 4-step random access configurations configured in the BWP, i.e only 2-step random access type configured in the BWP, otherwise the field is Need S | in case of separate RO, the field is optional need SChange 2stepOnly to 2stepOnlySepRO[ZTE]It seems the “2stepOnly” mainly means the IE should be mandatory present in case 2stepOnly case, otherwise the IE is need S. The current condition seems fine for us. | **Rapporteur: ConcReject2**It is clear already that for a 2-step only RO, the condition applies. This is clear from field descriptions of the parameters: “This field may only be present if no 4-step type RA is configured in the BWP or in the case of separate ROs with 4-step type RA.”. |
| H637 | 3 | 6.3.2 RACH-ConfigCommonTwoStepRA |  | 2StepOnlyL139 The field is mandatory present if prach-RootSequenceIndex L=139 and no 4-step random access type is configured, otherwise the field is absent, Need S. | The field description does not consider the case when 2-step and 4-step have separate RO. In this case, it is optional need S[ZTE]: see comments above for this | **Rapporteur: ConcReject2**Was corrected already, i.e. it is mentioned in the field description for the msgA-SubcarrierSpacing-r16 IE, which is the only parameter having this conditional presence code |
| H638 | 3 | 6.3.2 RACH-ConfigGenericTwoStepRA |  | msgA-TransMaxMax number of MsgA preamble transmissions performed before switching to 4-step random access (see TS 38.321 [3], clauses 5.1.1). This field may only be applicable in case of 2-step and 4-step RA type are configured andor switching to 4-step type RA is not supported.  | The sentence “This field may only be applicable in case of 2-step and 4-step RA type are configured andor switching to 4-step type RA is not supported. “ should be put under conditional presence tag[ZTE]Current text seems fine. | **Rapporteur: ConcReject2**The field description was already corrected/changed in the new version. |
| Z030 | 2 | - CFRA-TwoStep-r16 | 6.3.2 | ssb-PerRACH-OccasionTwoStepRA-r16 ENUMERATED {oneEighth, oneFourth, oneHalf, one, two, four, eight, sixteen} OPTIONAL -- Cond SSB-CFRAThe ssb-PerRACH-OccasionTwoStepRA-r16 is optional in CFRA-TwoStep-r16. However, regardless of the support of CSI-RS, we think the field should be mandatory included. | For the ssb-PerRACH-OccasionTwoStepRA-r16 in CFRA-TwoStep-r16, change the need code from optional to mandatory.[vivo]Considering that dedicated msgA PRACH occasions are optionally configured for 2-step CFRA, we should keep this field optional since the mapping relation can be obtained from the corresponding parameter for 2-step CBRA, which helps to reduce signaling overhead. | **Rapporteur: ConcReject2**The IE is not needed for CSI-RS similar to 4-step RA Type. |
| V804 | 3 | *MsgA-PUSCH-Resource* | 6.3.2 | Field description of *msgA-PUSCH-TimeDomainAllocation*:***msgA-PUSCH-TimeDomainAllocation***Indicates a combination of start symbol and length and PUSCH mapping type from the TDRA table (*PUSCH-TimeDomainResourceAllocationList* if provided in *PUSCH-ConfigCommon*, or in *PUSCH-Config,* or else the default Table 6.1.2.1.1-2 in 38.214 [19]) is used if *msgA-PUSCH-TimeDomainAllocation* is not provided in PUSCH-ConfigCommon or in *PUSCH-Config*.In our understanding, *msgA-PUSCH-TimeDomainAllocation* cannot be provided in *PUSCH-ConfigCommon* or in *PUSCH-Config*. Therefore, it should be replaced by *pusch-TimeDomainAllocationList*. Maybe it is a typo. | We propose that (revision in red): ***msgA-PUSCH-TimeDomainAllocation***Indicates a combination of start symbol and length and PUSCH mapping type from the TDRA table (*PUSCH-TimeDomainResourceAllocationList* if provided in *PUSCH-ConfigCommon*, or in *PUSCH-Config,* or else the default Table 6.1.2.1.1-2 in 38.214 [19]) is used if *pusch-TimeDomainAllocationList* is not provided in PUSCH-ConfigCommon or in *PUSCH-Config*. | **Rapporteur: ConcAgree2** |
| V805 | 2 | *RACH-ConfigCommonTwoStepRA* | 6.3.2 | msgA-CB-PreamblesPerSSB-PerSharedRO-r16 INTEGER (1..60)According to the current RRC spec, the possible value range for this parameter needs to be aligned with value range for the configured SSBs per RACH occasion in *SSB-perRACH-OccasionAndCB-PreamblesPerSSB* in *RACH-ConfigCommon*, whose value range is quoted below.Obviously, we can conclude that the value range (i.e. 27 possible values) of msgA-CB-PreamblesPerSSB-PerSharedRO-r16 is: {n1,n2,n3,n4,n5,n6,n7,n8,n9,n10,n11,n12,n13,n14,n15,n16,n20,n24,n28,n32,n36,n40,n44,n48,n52,n56,n60}. To save 1-bit signalling overhead, we should use “ENUMERATED” struct, instead of “INTEGER” struct.ssb-perRACH-OccasionAndCB-PreamblesPerSSB CHOICE { oneEighth ENUMERATED {n4,n8,n12,n16,n20,n24,n28,n32,n36,n40,n44,n48,n52,n56,n60,n64}, oneFourth ENUMERATED {n4,n8,n12,n16,n20,n24,n28,n32,n36,n40,n44,n48,n52,n56,n60,n64}, oneHalf ENUMERATED {n4,n8,n12,n16,n20,n24,n28,n32,n36,n40,n44,n48,n52,n56,n60,n64}, one ENUMERATED {n4,n8,n12,n16,n20,n24,n28,n32,n36,n40,n44,n48,n52,n56,n60,n64}, two ENUMERATED {n4,n8,n12,n16,n20,n24,n28,n32}, four INTEGER (1..16), eight INTEGER (1..8), sixteen INTEGER (1..4)} | msgA-CB-PreamblesPerSSB-PerSharedRO-r16 ENUMERATED {n1,n2,n3,n4,n5,n6,n7,n8,n9,n10,n11,n12,n13,n14,n15,n16,n20,n24,n28,n32,n36,n40,n44,n48,n52,n56,n60} OPTIONAL, -- Cond SharedRO | **Rapporteur: ConcReject2**This issue has already been discussed with conclusion: **The change proposal is not requred as the current signalling sturcture support aligned value ranges without the proposed limitation. (R2-2004173)** |
| V807 | 3 | *RACH-ConfigDedicated* | 6.3.2 | ***cfra-TwoStep*** field descriptions:Parameters for contention free 2-step random access type to a given target cell. Network ensures that *cfra* and *cfra-TwoStep* are not configured at the same time. If this field is absent, the UE performs contention based random access.In our understanding, if possible that this field is absent while *cfra* for 4-step CFRA is present, the UE will perform contention free RA procedure in this case.  | ***cfra-TwoStep*** field descriptions:Parameters for contention free 2-step random access type to a given target cell. Network ensures that *cfra* and *cfra-TwoStep* are not configured at the same time. If this field and *cfra* are absent, the UE performs contention based random access. | **Rapporteur: ConcAgree2** |

# New/leftover RILs – email discussion [AT110-e][507][2s RA] CP and ASN.1 Issues (Ericsson)

| Q007 | 2 | RACH-ConfigCommonTwoStepRA-r16 |  | ra-PrioritizationForAI-r16 is need M. In its field description, “If not configured” can means ra-PrioritizationForAI-r16 is absent in RACH-ConfigCommonTwoStepRA, then UE shall use the values configured in 4-step. That means such configuration does not allow RACH prioritization to be configured ONLY for 4-step RACH. | We should discuss if RA prioritization for access identity can be configured ONLY for 4-step. If deemed necessary, we’d like to suggesting removing the following sentence ‘If not configured, the UE shall use the values in the corresponding 4-step configuration if configured.’[OPPO] Agree to remove the sentence as proposed. Maybe we also need to remove the ‘OPTIONAL’ and ‘Need M’ for ra-PrioritizationForAI-r16 and ra-Prioritization. These two fields should be mandatory present if prioritization is configured for access identity. Prioritization for AI can not be implemented with only one of them. | **Rapporteur: PropDiscuss2** |
| --- | --- | --- | --- | --- | --- | --- |
| Q008 | 2 | RACH-ConfigCommonTwoStepRA-r16 |  | ra-Prioritization-r16 is need M. In its field description, “If not configured” can means ra-Prioritization-r16 is absent in RACH-ConfigCommonTwoStepRA, then UE shall use the values configured in 4-step. That means such configuration does not allow RACH prioritization to be configured ONLY for 4-step RACH. | We should discuss if RA prioritization for access identity can be configured ONLY for 4-step. If deemed necessary, we’d like to suggesting removing the following sentence ‘If not configured, the UE shall use the values in the corresponding 4-step configuration if configured.’[OPPO]See above. | **Rapporteur: PropDiscuss2** |
| New RILs |  |  |  |  |  | Below needs discussion/confirmation before implementation. |
| E931 | 2 | RACH-ConfigDedicated | 6.3.2 | The conditional presence code “*SSB-CFRA*” is used both for *ssb-perRACH-Occasion* in *occasions* in *CFRA* and for *ssb-perRACH-OccasionTwoStepRA-r16* in *ocasionsTwoStepRA-r16* in *CFRA-TwoStep-r16*. Still the explanation of this conditional presence code reads:“The field is mandatory present if the field resources in CFRA is set to ssb; otherwise it is absent.”Apparently, the explanation text has not been updated to take into account that the conditional presence code can be used in *CFRA-TwoStepRA-r16* too. | Proposed CR (updating the explanation text for the conditional presence code “*SSB-CFRA*”):“The field is mandatory present if the field resources in CFRA or CFRA-TwoStep is set to ssb; otherwise it is absent.”[OPPO] Since only SSB based CFRA is supported in 2-step RACH, the conditional presence code ‘*SSB-CFRA*’ for *ssb-perRACH-Occasion* in *ocasionsTwoStepRA-r16* in *CFRA-TwoStep-r16* is not needed. We notice that ‘*SSB-CFRA*’ has already been removed from 2-step CFRA configurations in the updated CR, so the proposal might be unnecessary.  | **Rapporteur: PropAgree2** |
| E932 | 2 | MsgA-PUSCH-Config | 6.3.2 | The explanation of the conditional presence tag “*InitialBWPConfig*” is currently:“The field is mandatory present in *initialUplinkBWP* or if 2-step is configured on the BWP but no 2-step configuration is provided in *initialUplinkBWP*, otherwise the field is Need S.”1. It is unclear what “*initialUplinkBWP*” means in this context. It is a parameter name that occurs in the ASN.1 code as two different types, namely *BWP-UplinkCommon* and *BWP-UplinkDedicated*. It is unclear how this relates to the context of this conditional presence tag.2. “2-step” is sloppy writing when referring to the 2-step random access type. | Change the explanation of the conditional presence tag “*InitialBWPConfig*” to:“The field is mandatory present when *MsgA-PUSCH-Config* provides configuration for the initial uplink BWP, or when *MsgA-PUSCH-Config* provides configuration for a non-initial uplink BWP but no 2-step configuration is provided for the initial uplink BWP , otherwise the field is Need S.”[OPPO] Agree. | **Rapporteur: DiscMail** |
| E933 | 3 | RACH-ConfigCommonTwoStepRA | 6.3.2 | The parameter *msgA-TotalNumberOfRA-Preambles-r16* is not needed (and its current interpretation is unclear). The number of CBRA preambles is obvious from the configuration of the number of CBRA preambles per SSB (in *RACH-ConfigCommon* for 4-step RA and in *RACH-ConfigCommonTwoStepRA* for 2-step RA). The reason for introducing the *totalNumberOfRA-Preambles* in *RACH-ConfigCommon* was that EN-DC only UEs should not be mandated to be able to understand the configuration of preambles for SI request and then this parameter is needed so that such a UE should know the range of preambles used for RA so that it knows that when a RAPID indicating a preamble outside this range is included in a RAR, it should not expect a MAC RAR to be associated with the RAPID. However, Msg1 based SI request is not specified for 2-step RA, so the issue is non-existent for 2-step RA. However, we must ensure that there is no confusion in the case where ROs are shared between the 4-step RA type and the 2-step RA type. It must be ensured that EN-DC only UEs can understand the full range of preambles used for RA, regardless of the RA type. | Remove the *msgA-TotalNumberOfRA-Preambles-r16* parameter from the *RACH-ConfigCommonTwoStepRA* IE and clarify the meaning of the *totalNumberOfRA-Preambles* parameter in the *RACH-ConfigCommon* IE so that it fulfils its purpose for both 4-step RA only ROs and shared ROs (where the parameter’s purpose is to indicate the preamble index range above which the preamble indexes are associated with preambles configured for SI request). Hence, a clear definition which works in all cases where 4-step RA is configured (and where thus SI request preambles may be configured) should relate to the number of preambles configured for SI request. To this end, the first sentence of the field description for the totalNumberOfRA-Preambles should be modified to take into account that the RO may be shared with the 2-step random access type. The old sentence:“Total number of preambles used for contention based and contention free random access in the RACH resources defined in *RACH-ConfigCommon*, excluding preambles used for other purposes (e.g. for SI request).”Should be changed to:“Total number of preambles used for contention based and contention free 4-step or 2-step type random access in the RACH resources defined in *RACH-ConfigCommon*, excluding preambles used for other purposes (e.g. for SI request), i.e. the field should be set to 64 minus the number of preambles configured for other purposes than random access (e.g. SI request).”[OPPO] Agree to remove the *msgA-TotalNumberOfRA-Preambles-r16* from the *RACH-ConfigCommonTwoStepRA* IE. | **Rapporteur: DiscMail** |
| E934 | 2 | RACH-ConfigCommonTwoStepRA | 6.3.2 | It is not stated that the *msgA-SSB-PerRACH-OccasionAndCB-PreamblesPerSSB* field shall not be configured in the case where RACH occasions are shared between 2-step and 4-step type random access in the BWP (since then the *msgA-CB-PreamblesPerSSB-PerSharedRO* field is used instead). | Add the following sentence to the field description for *msgA-SSB-PerRACH-OccasionAndCB-PreamblesPerSSB* or to the explanation of the conditional presence tag “*2StepOnly*”:“The field is not be present when RACH occasions are shared between 2-step and 4-step type random access in the BWP.”[OPPO] Agree to add the sentence in the field description since the conditional presence code ‘2StepOnly’ is also configured for other parameters which may not need this newly added restriction. | **Rapporteur: PropAgree2** |
| E935 | 2 | RACH-ConfigCommonTwoStepRA | 6.3.2 | The field description for *msgA-SubcarrierSpacing* does not accurately convey what it should. In addition, it does not match the explanation of the associated conditional presence tag (i.e. “*2StepOnlyL139*”). | Change the field description to:““***msgA-SubcarrierSpacing***Subcarrier spacing of PRACH (see TS 38.211 [16], clause 5.3.2). Only the values 15 or 30 kHz (FR1), and 60 or 120 kHz (FR2) are applicable. The field is ~~only~~ mandatory present in case of 2-step RA type only BWP.~~,~~ If separate RACH occasions are configured and if ***msgA-SubcarrierSpacing*** is absent, ~~otherwise~~ the UE applies the SCS as derived from the *msgA-PRACH-ConfigurationIndex* in *RACH-ConfigGenericTwoStepRA* in the configured BWP (see tables Table 6.3.3.1-1 and Table 6.3.3.2-2, TS 38.211 [16]). If RACH occasions are shared between 2-step and 4-step RA type, the field is absent. The value also applies to contention free 2-step random access type (*RACH-ConfigDedicated*). ~~This field is only configured for the case of separate ROs between 2-step and 4-step type random access~~.””In addition, the explanation text for the associated conditional presence tag “*2StepOnlyL139*” should be change to:“The field is mandatory present if *prach-RootSequenceIndex* L=139 and no 4-step random access type is configured, otherwise the field is ~~absent,~~ Need S”[OPPO] Agree that we need to further update the field description and the conditional presence tag for *msgA-SubcarrierSpacing.* For 2-step only configuration, the field can be absent when the PRACH root sequence length is set to 839 in which case the SCS can be derived from *msgA-PRACH-ConfigurationIndex* in *RACH-ConfigGenericTwoStepRA.*  | **Rapporteur: PropReject**As clarified in RAN1 agreement the current text is correct. Agreements RAN1 #98bis:For separately configured ROs, the 2-step RACH MsgA PRACH SCS is indicated by the corresponding 4-step RACH parameter (*msg1-subcarrierSpacing*). |
| V801 | 3 | *msgA-ConfigCommon-r16* |  | The conditional tag for msgA-ConfigCommon-r16 should be replaced by Need M since there is no case where 2-step RACH configuration is mandatorily required to be configured.  | msgA-ConfigCommon-r16 SteupRelease { MsgA-ConfigCommon-r16 } OPTIONAL, -- Need M[OPPO] We think the current text has reflected the intention of V801 and V802.  | **Rapporteur: DiscMail** |
| V802 | 3 | *msgA-ConfigCommon* |  | We need to capture the agreement that 2-step RACH can only be configured on SpCell in the field description of *msgA-ConfigCommon* | Add the sentence that this field can only be configured on the SpCell. | **Rapporteur: PropReject2. Condition to *SpCellOnly2* is clear.** |
| V803 | 3 | *msgA-PUSCH-ResourceGroupB* |  | The sentence “If filed is not configured………..when performing MsgA transmission using group B” is quite confuse. If this field is absent, the UE should use the PUSCH configuration for groupB of initial UL BWP. | MsgA PUSCH resources that the UE shall use when performing MsgA transmission using preambles group B. If field is not configured for the selected UL BWP, the UE shall use the MsgA PUSCH configuration for group B of initial UL BWP. | **Rapporteur: PropReject2****Resolved as a result of S505** |
| V806 |  | *msgA-SubcarrierSpacing* |  | The field *msgA-SubcarrierSpacing* is only needed for the case of 2-step only BWP. | Remove the sentence “This field is only configured for the case of separate ROs between 2-step and 4-step type random access”. | **Rapporteur: PropReject2****Resolved as a result of O916** |

# 4 Conclusion

1. TBD