3GPP TSG-RAN WG2 #118-e R2-22xxxxx

Electronic meeting, 2022-05-09 - 2022-05-20

Agenda Item: 6.18.1

Source: Ericsson

Title: Report from [AT118-e][507][RA Part] CP open issues and CR 38.331 (Ericsson)

Document for: Discussion, Decision

# 1 Introduction

This contribution is a summary of the discussion for the remaining CP issues /RILs for RICS (RA Partitioning):

* [AT118-e][507][RA Part] CP open issues and CR 38.331 (Ericsson)

 CP open issues and CR capturing agreed corrections

Deadline: To be set by rapporteur aiming to have company inputs and proposals by

The following agreements were reached in the first online session:

Agreement

1. Use SetupRelease-structure, similar to the legacy RACH config. And call the field/IEs "list" as they provide a list of additional RACH configurations. Update IE name accordingly
2. Delete the extension marker and the field laterThanRel17Features from FeatureCombination IE and use spare fields for future extendibility. FFS the number of spare values
3. Add a non-critical extension (i.e., extension marker) in the FeatureCombinationPreambles IE
4. Add msgA-RSRP-Threshold (without SSB suffix) in partition
5. Allow partition-specific msgA PUSCH resources. If not provided we use the general PUSCH
6. rsrp-ThresholdMsg3 is put in BWP-UplinkCommon, editor’s note is removed, and field description is added.
7. FFS pending slicing discussion - add fields feature-RA-PrioritizationForAccessIdentity-r17 and ra-PrioritizationForAccessIdentity-r16 and verify if it is clear how the UE selects. Ask question in email discussion for other non-slicing features
8. Change the name of the field "featureCombinationPreambles" to "featureCombinationPreamblesList"

# 2 Discussion on open issues

## 2.1 Number of spare values in FeatureCombination (C153, Z375, E216)

RAN2 agreed:

1. **Delete the extension marker and the field laterThanRel17Features from FeatureCombination IE and use spare fields for future extendibility. FFS the number of spare values**

In R2-2204340 the following was proposed which has 4 spare values. This seemed to have the most support in the ad-hoc.

– *FeatureCombination*

The IE *FeatureCombination* indicates a combination of features to be associated with a RA partition (i.e. an instance of *FeatureCombinationPreambles*).

***FeatureCombination* information element**

-- ASN1START

-- TAG-FEATURECOMBINATION-START

FeatureCombination-r17 ::= SEQUENCE {

 redCap-r17 ENUMERATED {true} OPTIONAL, -- Need R

 smallData-r17 ENUMERATED {true} OPTIONAL, -- Need R

 sliceGroup-r17 SliceGroupList-r17 OPTIONAL, -- Need R

 covEnh-r17 ENUMERATED {true} OPTIONAL, -- Need R

 spare4 ENUMERATED {true} OPTIONAL, -- Need R

 spare3 ENUMERATED {true} OPTIONAL, -- Need R

 spare2 ENUMERATED {true} OPTIONAL, -- Need R

 spare1 ENUMERATED {true} OPTIONAL -- Need R

}

SliceGroupList-r17 ::= SEQUENCE (SIZE (1..ffsUpperLimit)) OF SliceGroupID-r17

-- TAG-FEATURECOMBINATION-STOP

-- ASN1STOP

**Q1: Is the above proposal with 4 spare values acceptable?**

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| **Company** | **Yes/No (if no indicate number and motivation)** | **Comments** |
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## 2.2 H537

RAN2 agreed:

 **3 Add msgA-RSRP-Threshold (without SSB suffix) in partition**

Here is a draft text proposal to capture the agreement.

FeatureCombinationPreambles-r17 ::= SEQUENCE {

 featureCombination-r17 FeatureCombination-r17,

 startPreambleForThisPartition-r17 INTEGER (1..64),

 numberOfPreamblesForThisPartition-r17 INTEGER (1..64),

 ssb-SharedRO-MaskIndex-r17 INTEGER (1..15) OPTIONAL, -- Need R

 numberOfRA-PreamblesGroupA-r17 INTEGER (1..64) OPTIONAL, -- Need R

 separateMsgA-PUSCH-Config-r17 MsgA-PUSCH-Config-r16 OPTIONAL, -- Cond MsgAConfigCommon

 msgA-RSRP-Threshold-r17 RSRP-Range OPTIONAL, -- Need R

 featureSpecificParameters-r17 SEQUENCE {

 rsrp-ThresholdSSB-r17 RSRP-Range OPTIONAL, -- Need R

 rsrp-ThresholdMsg3-r17 RSRP-Range OPTIONAL, -- Need R

 -- Editor's note: TBD if this parameter indeed can be partition-specific.

 messagePowerOffsetGroupB-r17 ENUMERATED { minusinfinity, dB0, dB5, dB8, dB10, dB12, dB15, dB18} OPTIONAL, -- Need R

 ra-SizeGroupA-r17 ENUMERATED {b56, b144, b208, b256, b282, b480, b640, b800, b1000, b72, spare6,

 spare5,spare4, spare3, spare2, spare1} OPTIONAL, -- Need R

 deltaPreamble-r17 INTEGER (-1..6) OPTIONAL -- Need R

 }

}

|  |
| --- |
| ***msgA-RSRP-Threshold***The UE selects 2-step random access type to perform random access based on this threshold (see TS 38.321 [3], clause 5.1.1). This field is only present if partition specific RSRP threshold for 2-step and 4-step RA type are configured for the BWP. If configured, this parameter overrides *msgA-RSRP-Threshold-r16*. If absent, the UE applies *msgA-RSRP-Threshold-r16*, if configured. |

**Q2: Is the above text proposal for adding partition specific msgA-RSRP-Threshold (without SSB-suffix) acceptable?**

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| **Company** | **Yes/No**  | **Comments** |
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## 2.3 L019

**The following point is still open:**

LG added this RIL where argue that the wrapper-sequence "featureSpecificParameters" should be extendable by adding extension markers in the end of the sequence.

FeatureCombinationPreambles-r17 ::= SEQUENCE {

 featureCombination-r17 FeatureCombination-r17,

 startPreambleForThisPartition-r17 INTEGER (1..64),

 numberOfPreamblesForThisPartition-r17 INTEGER (1..64),

 ssb-SharedRO-MaskIndex-r17 INTEGER (1..15) OPTIONAL, -- Need R

 numberOfRA-PreamblesGroupA-r17 INTEGER (1..64) OPTIONAL, -- Need R

 separateMsgA-PUSCH-Config-r17 MsgA-PUSCH-Config-r16 OPTIONAL, -- Cond MsgAConfigCommon

 featureSpecificParameters-r17 SEQUENCE {

 rsrp-ThresholdSSB-r17 RSRP-Range OPTIONAL, -- Need R

 rsrp-ThresholdMsg3-r17 RSRP-Range OPTIONAL, -- Need R

 -- Editor's note: TBD if this parameter indeed can be partition-specific.

 messagePowerOffsetGroupB-r17 ENUMERATED { minusinfinity, dB0, dB5, dB8, dB10, dB12, dB15, dB18} OPTIONAL, -- Need R

 ra-SizeGroupA-r17 ENUMERATED {b56, b144, b208, b256, b282, b480, b640, b800, b1000, b72, spare6,

 spare5,spare4, spare3, spare2, spare1} OPTIONAL, -- Need R

 deltaPreamble-r17 INTEGER (-1..6) OPTIONAL -- Need R

 }

}

Xiaomi points out that adding extension markers to this IE is not suitable since this IE will be included in SIB1. The rapporteur assumes that Xiaomi's concern is related to the overhead it would cost of using the extension markers. However, if we don’t add extension markers in this IE, we would, if we in Rel-18 want to allow new partition-specific parameters, create a new version of FeatureCombinationPreambles (e.g. FeatureCombinationPreambles-r18) that is a copy of the Rel-17 version but in addition has the new partition-specific parameters. Further, the "additional RACH configuration"-field would need to be extended to also refer to the Rel-18 version of the FeatureCombinationPreambles and the relation between the Rel-17 FeatureCombinationPreambles and the Rel-18 FeatureCombinationPreambles would need to be clear. Based on this, we think it is justified to do as LG suggests here, i.e. to add an extension-marker to FeatureCombinationPreambles. However, we think the extension-marker should be in the main IE itself, rather than in the wrapper-sequence "featureSpecificParameters" as we would then be able to add parameters not specific to a particular feature.

**The rapporteur proposed to adopt the proposal in L019 but add an extension marker in IE FeatureSpecificParameters, rather than in the featureSpecificParameters-wrapper in this IE**.

**Q3: Please indicate your view on this, and indicate if/where extension markers should be added.**

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| **Company** | **Agree with rapporteur?** | **Comments** |
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## 2.4 Z377, H538, H901

RAN2 agreed in the first online session:

 **6 rsrp-ThresholdMsg3 is put in BWP-UplinkCommon, editor’s note is removed, and field description is added.**

Here is a draft text proposal to capture the agreement:

FeatureCombinationPreambles-r17 ::= SEQUENCE {

 featureCombination-r17 FeatureCombination-r17,

 startPreambleForThisPartition-r17 INTEGER (1..64),

 numberOfPreamblesForThisPartition-r17 INTEGER (1..64),

 ssb-SharedRO-MaskIndex-r17 INTEGER (1..15) OPTIONAL, -- Need R

 numberOfRA-PreamblesGroupA-r17 INTEGER (1..64) OPTIONAL, -- Need R

 separateMsgA-PUSCH-Config-r17 MsgA-PUSCH-Config-r16 OPTIONAL, -- Cond MsgAConfigCommon

 featureSpecificParameters-r17 SEQUENCE {

 rsrp-ThresholdSSB-r17 RSRP-Range OPTIONAL, -- Need R

 ~~rsrp-ThresholdMsg3-r17 RSRP-Range OPTIONAL, -- Need R~~

 ~~-- Editor's note: TBD if this parameter indeed can be partition-specific.~~

 messagePowerOffsetGroupB-r17 ENUMERATED { minusinfinity, dB0, dB5, dB8, dB10, dB12, dB15, dB18} OPTIONAL, -- Need R

 ra-SizeGroupA-r17 ENUMERATED {b56, b144, b208, b256, b282, b480, b640, b800, b1000, b72, spare6,

 spare5,spare4, spare3, spare2, spare1} OPTIONAL, -- Need R

 deltaPreamble-r17 INTEGER (-1..6) OPTIONAL -- Need R

 }

}

#### – *BWP-UplinkCommon*

The IE *BWP-UplinkCommon* is used to configure the common parameters of an uplink BWP. They are "cell specific" and the network ensures the necessary alignment with corresponding parameters of other UEs. The common parameters of the initial bandwidth part of the PCell are also provided via system information. For all other serving cells, the network provides the common parameters via dedicated signalling.

*BWP-UplinkCommon* information element

-- ASN1START

-- TAG-BWP-UPLINKCOMMON-START

BWP-UplinkCommon ::= SEQUENCE {

 genericParameters BWP,

 rach-ConfigCommon SetupRelease { RACH-ConfigCommon } OPTIONAL, -- Need M

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

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

 ...,

 [[

 rach-ConfigCommonIAB-r16 SetupRelease { RACH-ConfigCommon } OPTIONAL, -- Need M

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

 msgA-ConfigCommon-r16 SetupRelease { MsgA-ConfigCommon-r16 } OPTIONAL -- Cond SpCellOnly2

 ]],

 [[

 enableRA-PrioritizationForSlicing-r17 BOOLEAN OPTIONAL, -- Cond RAPrioSliceAI

additionalRACH-ConfigCommon-r17 SEQUENCE (SIZE(0..maxAdditionalRACH-r17)) OF AdditionalRACH-ConfigCommon-r17 OPTIONAL, -- Cond SpCellOnly2~~3~~

rsrp-ThresholdMsg3-r17 RSRP-Range OPTIONAL -- Need R

 ]]

}

-- TAG-BWP-UPLINKCOMMON-STOP

-- ASN1STOP

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| --- |
| *BWP-UplinkCommon* field descriptions |
| ***additionalRACH-ConfigCommon***List of feature or feature combination-specific RACH configurations, i.e. the RACH configurations configured in addition to the one configured by *rach-ConfigCommon* and by *msgA-ConfigCommon*.Editor's note: Naming of this can be discussed further, e.g. to make it clear that this field can configure msgA-ConfigCommons also. |
| ***enableRA-PrioritizationForSlicing***Indicates whether or not the random access prioritization for slicing should override the ra-PrioritizationForAccessIdentity. If value *TRUE* is configured, the UE should only apply the random access prioritization for slicing. If value *FALSE* is configured, the UE should only apply ra-PrioritizationForAccessIdentity. |
| ***msgA-ConfigCommon***Configuration of the cell specific PRACH and PUSCH resource parameters for transmission of MsgA in 2-step random access type procedure. The NW can configure *msgA-ConfigCommon* only for UL BWPs if the linked DL BWPs (same bwp-Id as UL-BWP) are the initial DL BWPs or DL BWPs containing the SSB associated to the initial BL BWP |
| ***pucch-ConfigCommon***Cell specific parameters for the PUCCH of this BWP.  |
| ***pusch-ConfigCommon***Cell specific parameters for the PUSCH of this BWP. |
| ***rach-ConfigCommon***Configuration of cell specific random access parameters which the UE uses for contention based and contention free random access as well as for contention based beam failure recovery in this BWP. The NW configures SSB-based RA (and hence *RACH-ConfigCommon*) only for UL BWPs if the linked DL BWPs (same *bwp-Id* as UL-BWP) are the initial DL BWPs or DL BWPs containing the SSB associated to the initial DL BWP. The network configures *rach-ConfigCommon*, whenever it configures contention free random access (for reconfiguration with sync or for beam failure recovery).  |
| ***rach-ConfigCommonIAB***Configuration of cell specific random access parameters for the IAB-MT. The IAB specific IAB RACH configuration is used by IAB-MT, if configured. |
| ***rsrp-ThresholdMsg3***Threshold used by the UE for determining whether to select resources indicating Msg3 repetition in this BWP, as specified in 3GPP TS 38.321 [3]. |
| ***useInterlacePUCCH-PUSCH***If the field is present, the UE uses uplink frequency domain resource allocation Type 2 for cell-specific PUSCH, e.g., PUSCH scheduled by RAR UL grant (see 38.213 clause 8.3 and 38.214 clause 6.1.2.2) and uses interlaced PUCCH Format 0 and 1 for cell-specific PUCCH (see TS 38.213 [13], clause 9.2.1). |

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| Conditional Presence | Explanation |
| *RAPrioSliceAI* | The field is optionally present, Need M, if both parameters ra-PrioritizationForAccessIdentity and the random access prioritization for slicing are included, and the field is sent in system information. It is absent otherwise. |
| *SpCellOnly2* | The field is optionally present, Need M, in the *BWP-UplinkCommon* of an SpCell. It is absent otherwise. |
| *~~SpCellOnly3~~* | ~~The field is optionally present, Need M, in the~~ *~~BWP-UplinkCommon~~* ~~of an SpCell. It is absent otherwise.~~ |

**Q4: Is the above text proposal for adding rsrp-ThresholdMsg3 in BWP-UplinkCommon acceptable?**

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| **Company** | **Yes/No** | **Comments** |
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## 2.5 V541

RAN2 agreed in the first online session:

**7 FFS pending slicing discussion - add fields feature-RA-PrioritizationForAccessIdentity-r17 and ra-PrioritizationForAccessIdentity-r16 and verify if it is clear how the UE selects. Ask question in email discussion for other non-slicing features**

The following point is still open:

In V541 Vivo proposes to add the fields feature-RA-PrioritizationForAccessIdentity-r17 and ra-PrioritizationForAccessIdentity-r16.

FeatureCombinationPreambles-r17 ::= SEQUENCE {

 featureCombination-r17 FeatureCombination-r17,

 startPreambleForThisPartition-r17 INTEGER (1..64),

 numberOfPreamblesForThisPartition-r17 INTEGER (1..64),

 ssb-SharedRO-MaskIndex-r17 INTEGER (1..15) OPTIONAL, -- Need R

 numberOfRA-PreamblesGroupA-r17 INTEGER (1..64) OPTIONAL, -- Need R

 separateMsgA-PUSCH-Config-r17 MsgA-PUSCH-Config-r16 OPTIONAL, -- Cond MsgAConfigCommon

 featureSpecificParameters-r17 SEQUENCE {

 rsrp-ThresholdSSB-r17 RSRP-Range OPTIONAL, -- Need R

 rsrp-ThresholdMsg3-r17 RSRP-Range OPTIONAL, -- Need R

 -- Editor's note: TBD if this parameter indeed can be partition-specific.

 messagePowerOffsetGroupB-r17 ENUMERATED { minusinfinity, dB0, dB5, dB8, dB10, dB12, dB15, dB18} OPTIONAL, -- Need R

 ra-SizeGroupA-r17 ENUMERATED {b56, b144, b208, b256, b282, b480, b640, b800, b1000, b72, spare6,

 spare5,spare4, spare3, spare2, spare1} OPTIONAL, -- Need R

 deltaPreamble-r17 INTEGER (-1..6) OPTIONAL -- Need R

 }

}

Initially assessment from the rapporteur was:

The proposal seems fine in general. Slicing WI have defined their own IEs for the RA-Prioritization. RAN2 needs to check and see if it is clear how UE selects which one to use in each possible situation. The latter seems to benefit from input from slicing but should be sorted out in the RICS group as this needs knowledge on the details of the RA Partitioning framework.

**And the initially proposal was:**

1. Discuss addition of the fields *feature-RA-PrioritizationForAccessIdentity-r17* and *ra-PrioritizationForAccessIdentity-r16* and verify if it is clear how the UE selects.

However, in the first online session RAN2 agreed that this is pending further progress in the slicing-session.

**Q5: Please comment on the above given more input on this topic.**

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| **Company** | **Comments** |
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**Q6: Are there other (non-slicing features) for which the fields feature-RA-PrioritizationForAccessIdentity-r17 and ra-PrioritizationForAccessIdentity-r16 may apply?**

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| **Company** | **Yes/No**  | **Comments** |
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## 2.6 H902

***The following was not treated in the first online session:***

In H902 it is proposed to restrict that the parameter rsrp-ThresholdSSB-SUL is only configured in rach-ConfigCommon, but its value still applies to all BWPs as legacy.

RACH-ConfigCommon ::= SEQUENCE {

 ...

 rsrp-ThresholdSSB-SUL RSRP-Range OPTIONAL, -- Cond SUL

 ...

}

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| *SUL* | The field is mandatory present in *initialUplinkBWP* if *supplementaryUplink* is configured in *ServingCellConfigCommonSIB* or if *supplementaryUplinkConfig* is configured in *ServingCellConfigCommon*; otherwise, the field is absent. |

The detailed proposal from Huawei is as follows:

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| *SUL* | The field is mandatory present in *rach-ConfigCommon* in *initialUplinkBWP* if *supplementaryUplink* is configured in *ServingCellConfigCommonSIB* or if *supplementaryUplinkConfig* is configured in *ServingCellConfigCommon*; otherwise, the field is absent. This field is not configured in *additionalRACH-ConfigCommon*. |

The rapporteur proposes to adopt H902, with this modification (removing the last sentence) as the need for the last sentence is not clear:

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| *SUL* | The field is mandatory present in *rach-ConfigCommon* in *initialUplinkBWP* if *supplementaryUplink* is configured in *ServingCellConfigCommonSIB* or if *supplementaryUplinkConfig* is configured in *ServingCellConfigCommon*; otherwise, the field is absent. ~~This field is not configured in~~ *~~additionalRACH-ConfigCommon~~*~~.~~ |

´

1. Adopt H902 but without the last sentence (This field is not configured in additionalRACH-ConfigCommon.)

**Q7: Do you agree with the rapporteur's proposal?**

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| **Company** | **Yes/No**  | **Comments** |
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## 2.7 H904

***The following was not treated in the first online session:***

H904 discusses under which conditions the parameter msgA-RSRP-Threshold should be present/absent. They argue that the field should be mandatory present if there are 2-step and 4-step RA for a particular feature combination is provided in a BWP:

RACH-ConfigCommonTwoStepRA-r16 ::= SEQUENCE {

 ...

 msgA-RSRP-Threshold-r16 RSRP-Range OPTIONAL, -- Cond 2Step4Step

 ...

}

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| *2Step4Step* | The field is mandatory present if both 2-step random access type and 4-step random access type are configured in the BWP, otherwise the field is not present.  |

The rapporteur proposes:

1. Adopt the proposal in H904 to capture that the field is mandatory if there are both 2-step and 4-step RA resources for a particular feature combination in a BWP.

**Q8: Do you agree with the rapporteur's proposal?**

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| **Company** | **Yes/No**  | **Comments** |
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## 2.8 Other

Per request, these topics were proposed for discussion. Please add new additional new **critical** issues/errors.

### 2.8.1 Capabilities

RAN2 have not discussed UE capability aspect of RICS. Whether RICS should have a specific capability? Whether it should be conditionally mandatory based on the related features (SDT, RedCap, etc).

**Q9: Company comments on capabilities for RICS.**

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| **Company** | **Comments** |
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### 2.8.2 CFRA

CFRA can be triggered by RRC or DCI. With RICS, RAN2 adds additional RACH configurations. The CFRA-trigger messages do not specify which RACH configuration should be used. One approach is to add a field saying which RACH config should be used, another approach is that the UE shall always use the "legacy" RACH configuration when doing CFRA.

**Q9: Company comments on CFRA with additional RACH configs.**

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| **Company** | **Comments** |
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### 2.8.3 Other critical issues

**Q9: Any other critical issues/errors that you foresee?**

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| **Company** | **Comments** |
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# 3 Conclusion

TBD