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?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No (if no indicate number and motivation)** | **Comments** |
| Huawei, HiSilicon | Yes |  |
| Intel | Yes |  |
| Samsung | Yes |  |
| ZTE | Yes |  |
| CATT | Yes |  |
| LGE | No (12) | In order to reduce the future restriction in future releases, the number of spare value should be large enough to implement all of features introduced in future releases. Otherwise, the same problem would be occur in future releases. Our proposal is to use 12 spare fields, in order to have consistency with the value of the FeaturePriority-17(integer value from 0 to 15). |
| Qualcomm | No (12) | We share similar view with LG |
| vivo | Yes | If 12 is used, then the maximum value of FeaturePriority-17 might be not large enough. (NOTE that we have 12 feature combinations already). So we are fine with the current proposal. |
| Apple | Yes | We are also fine with LG’s proposal, i.e., 12 spare values.  |
| OPPO | Yes | It’s acceptable for us with 4, if the feature for expansion in future release further exceeding, we think 6G can handle it. As feature increasing, it’s also a dizaster for MAC specification maintanance. |

Summary: Most companies are fine with the limit of 4 additional spares. Adding up to 12 would be more future proof, but may come with additional issues.

1. Adopt the text proposal using 4 spares in FeautureCombination IE.

## 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?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No**  | **Comments** |
| Huawei, HiSilicon | Yes | Typo: This field is only present if partition specific RSRP threshold for 2-step and 4-step RA type ~~are~~ is configured for the BWP. |
| Intel | Yes with comments | Wondering what is the difference between putting this outside and inside the featureSpecificParameters-r17 wrapper? Our preference is to define it inside the featureSpecificParameters-r17 since this is for SDT case? Since there are texts for absence in the field description, the need code should be Need S.  |
| Samsung | Yes |  |
| ZTE |  | “This field is only present if partition specific RSRP threshold for 2-step and 4-step RA type are configured for the BWP” should be revised to “This field is only present if partition specific 2-step and 4-step RA with the same feature combination are configured for the BWP” |
| CATT | Yes |  |
| LGE | Yes |  |
| Qualcomm | Yes |  |
| vivo | Yes |  |
| Apple | Yes |  |
| OPPO | Yes | Would like to unserstand that “If absent, the UE applies *msgA-RSRP-Threshold-r16*, if configured.” Is it possible when msgA-RSRP-Threshold-r17 is absent, the msgA-RSRP-Threshold-r16 is not configured? If it’s possible, what threshold the UE should UE, otherwise, “if configured” in the end of the sentence should be removed? |

Summary: Based on the input the rapporteur proposes to adopt the correction including a condition as suggested by companies. The excact details can be finilized through CR review.

1. Adopt H537 with the additional correction.

## 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.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree with rapporteur?** | **Comments** |
| Huawei, HiSilicon | Probably, but... | The proposal is a bit unclear (typo?). Is the intention to add NCE in FeatureCombinationPreambles-r17? If yes, this is OK and has been already agreed in the online session. As we raised in H536, the featureSpecificParameters field seems nto needed and its child fields can be directlymput in FeatureCombinationPreambles. |
| Intel | See comment | We are not sure about the exact proposal. The rapporteur suggestion looks OK if the proposal is to define an IE for FeatureSpecificParameters and include the extension marker in it |
| ZTE |  | The suggestion looks fine.  |
| CATT | Probably Yes  | We prefer that the extension marker is added in FeatureCombinationPreambles. As the extensible parameters probably are specific to future new features. It seems that these parameters should be included in featureSpecificParameters.  |
| LGE | Yes, but | As is agreement 3, an extension marker will be added in *FeatureCombinationPreambles*. Do we need to discuss again for this? |
| Qualcomm | Yes |  |
| vivo | Yes | It is useful considering Msg1 repetition in Rel-18. |
| Apple |  | We are fine to add the extension marker in FeatureCombinationPreambles. |
| OPPO |  | The proposal is not clear, is the extention marker added in the FeatureCombinationPreambles? |

Summary: There is indeed a typo and companies seem to have the correct understanding and support what was intended. Based on the input the rapporteur proposes:

1. Add extension markers in FeatureCombinationPreambles (outside wrapper sequence of *featureSpecificParameters*).

## 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

|  |
| --- |
| *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). |

|  |  |
| --- | --- |
| 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?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | Yes, but... | We think we also should specify a condition for this field’s presence following the LS from RAN in R1-2202829, as we proposed in R2-2206126:„Msg3RepAndNoRep The field is mandatory if both set(s) of Random Access resources with MSG3 repetition indication and set(s) of Random Access resources without MSG3 repetition indication are configured in the BWP. It is absent otherwise.“ |
| Intel | Yes | Also agree with Huawei addition of a condition, but prefer in the field description. |
| Samsung | Yes |  |
| ZTE | Yes | For the comment from HW, it seems it is also possible to include this in anycase (but set it to infinity in case the BWP has only CE resources). This will then be transparent to MAC otherwise, we will need to update MAC spec a little bit to consider the configurability aspect.  |
| CATT | Yes |  |
| LGE | Yes  |  |
| Qualcomm | Yes |  |
| vivo | Yes |  |
| Apple | Yes |  |
| OPPO | Yes | Field description of this parameter can be updated by considering the RAN1 ls based on the Huawei’s comment |

Summary: The correction including some improvements is supported. Based on the input the rapporteur proposes:

1. Adopt the text proposals for rsrp-ThresholdMsg3 in BWP-UplinkCommon above with the editorial correction “The field is mandatory if both set(s) of Random Access resources with MSG3 repetition indication and set(s) of Random Access resources without MSG3 repetition indication are configured in the BWP. It is absent otherwise”.

## 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.**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| ZTE | We think it is fine to add the feature-RA-PrioritizationForAccessIdentity-r17 and ra-PrioritizationForAccessIdentity-r16. If RACH partition without feature combination is selected, then slice specific RA prioritization without feature combination will be used. Otherwise, if RACH partition with feature combination is selected, then the corresponding feature specific RA prioritization will be used. |
| LGE | In RAN slicing, it is agreed that slice-specific RACH prioritization and slice-specific RACH partitioning works independenty. Therefore, there is no need to define slice-specific RACH priortization parameter separatedly for each RACH partition. |
| vivo | These parameters are used for the non-RAN slicing (with slice-specific prioritization parameter) feature. For example, these parameters can be configured for Redcap UEs. |
|  |  |

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

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No**  | **Comments** |
| Samsung | - | These can added optionally and network can decide whether to include these or not. E.g. SDT can benefit when ROs are shared with legacy RACH |
| ZTE |  | Although we don’t have agreement on this aspect, we see some benefit to enable separate configuration of powerRampingStepHighPriority for REDCAP and SDT. |
| CATT | No | In SDT, it was agreed that:11. RA prioritization related parameters cannot be configured for RA-SDT, i.e., powerRampingStepHighPriority, scalingFactorBIIn Msg3 Repetition and RedCap there was no such agreement to support dedicated RA prioritization. So we think it is not necessary to add the fields *feature-RA-PrioritizationForAccessIdentity-r17*. |
| LGE | No | For SDT, it is agreed that no SDT-specific RA prioritization parameter:* RA prioritization related parameters cannot be configured for RA-SDT, i.e., powerRampingStepHighPriority, scalingFactorBI

For other feature (i.e., CovEnh, RedCap), there was no discussion regarding RA prioritization, but considering these WIs are completed in RAN2 aspect, we do not want to discuss in order to allow the additional configuration, unless there is strong needs from each WI.  |
| vivo | Yes | Agree with Samsung. It can be used for Redcap and CE. |
| Apple | Yes | Agree with Samsung and ZTE. It could be benefitial for other features, and NW can optionally provide the configuration.  |
| OPPO | No | If there is no agrement, we assume it can not be applied. |

Summary: More discussion seems needed pending also input from slicing.

## 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

 ...

}

|  |  |
| --- | --- |
| *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:

|  |  |
| --- | --- |
| *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:

|  |  |
| --- | --- |
| *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?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No**  | **Comments** |
| Huawei, HiSilicon | Yes | To make it clear, we also propose to clarify the following in the field description:***rsrp-ThresholdSSB-SUL***The UE selects SUL carrier to perform random access based on this threshold (see TS 38.321 [3], clause 5.1.1). The value applies to all the BWPs and all RACH configurations. |
| Intel | Yes, but | The additional text (This field is not configured in *additionalRACH-ConfigCommon*) is needed to reduce the need to signal with the same value in the additionalRACH-ConfigCommon, therefore we prefer keeping it. Another alternative is to make it clear that rsrp-ThresholdSSB-SUL is only provided in rach-ConfigCommon in initialUplinkBWP. |
| ZTE | Yes, but | Agree with Intel and we also prefer to keep the last sentence (i.e. This field is not configured in *additionalRACH-ConfigCommon*). Without the last sentence, the NW has to configure the rsrp-ThresholdSSB-SUL in each rach-ConfigCommon, including the rach-ConfigCommon in additionalRACH-ConfigCommon. |
| CATT | Yes |  |
| LGE | No, but | In our understanding, the last sentence is to clarify that rsrp-ThresholdSSB-SUL is only configured in RACH-ConfigCommon for legacy RACH configuration (i.e., not in RACH-ConfigCommon included in addtionalRACH-ConfigCommon). Therefore, we prefer to adopt H902 as it is, i.e., leave the last sentence, in order to reduce the signaling overhead. However, we can accept the rapporteur’s proposal as long as rsrp-ThresholdSSB-SUL in multiple RACH configurations have a common value.  |
| Qualcomm | Yes |  |
| vivo | Yes |  |
| Apple | Yes |  |
| OPPO | Yes | We prefer to keep the sentence. |

Summary: The correction including the last sentence as proposed in H902 and the addition “and all RACH configurations” seems supported.

1. Implement H902 with the addition of “and all RACH configurations” in field description.

## 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

 ...

}

|  |  |
| --- | --- |
| *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?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No**  | **Comments** |
| Huawei, HiSilicon | Yes (proponent) | We provided a proposal for the update in R2-2206127: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 field is mandatory present in *msgA-ConfigCommon* field in *AdditionalRACH-ConfigCommon* if both 2-step random access type and 4-step random access type are configured for the same feature combination in the BWP. |
| Intel | Yes |  |
| ZTE | Yes,but | For the legacy text, we should clarify that it only applies to the case when there is no feature combination. Otherwise, it seems the legacy text also applies for the case with feature combination case. |
| CATT | Yes |  |
| LGE | Yes |  |
| Qualcomm | Yes |  |
| vivo | Yes |  |
| Apple | Yes |  |
| OPPO | Yes |  |

Summary: The correction with the addition from HW seems supported. A clarification of legacy field need to be discussed with the CR review.

1. Implement H904 with the addition from HW. Discuss additional changes for legacy text with CR.

## 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.**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei, HiSilicon | We think the RICS-specific capability is NOT needed. If a UE is expected to support a certain feature (e.g., RA-SDT), then the UE should use RACH indication common signalling to obtain the available RACH configuration. Hence, the support for RACH indications comes with a specific feature capability. No need for anything additional. |
| Intel | We do not think further capability signalling is needed for RICS, other than the capability signalling from related features.  |
| ZTE | No separate capability is needed for RICS. If a UE supports any feature that requires partitioning then it should support this.  |
| CATT | In slice, it has been captured in TS 38.306 thats:**Random access partitioning for Slicing**It is optional for UE to support slice based RACH partitioning as specified in TS 38.321 [8].So similar UE capability can be defined for related features. |
| LGE | In our view, if one of the RACH partitioning features is supported, it implies that RACH partitioning is supported for the UE. Therefore, there is no need to define the separated capability for RICS.  |
| Qualcomm | A UE which is capable fo acquiring RACH resources from SIB does not necessarily support all the requirements of RICS. So even if a UE indicates no support for RICS, it is still possible for UE to RACH (e.g. a RedCap UE performs RACH over RedCap-specific RA resources for common 4-step RACH. So we think RICS should be an optional UE capability with signaling. Or at least mandatory with capabiltiy signaling.  |
| vivo | In new capability is needed for RICS. If a UE is capable of a feature requiring RA partitioning (e.g. RA-SDT, Msg1 indication of RedCap), then this UE shall support RA partitioning. For example, a redcap UE (mandatory supports Msg1 indication of Redcap) shall inherently support the RA partitioning function.  |
| Apple | It can rely on the corresponding features.  |
| OPPO | We share comments from CATT/Qualcomm, even if UE indicates to support a feature, it does not necessarily mean it needs to support RACH partition to indicate the feature. |

 Summary: There is no consensus for a RICS specific capability and the topic needs more discussion.

1. As a baseline no RACH partitioning specific capability is defined. RAN2 to discuss further if additional capabilities are needed in addition to the per feature capabilities.

### 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.**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei, HiSilicon | For non-RedCap UEs the legacy RACH configuration should be used as currently captured in MAC specifications. RedCap UEs should use RedCap specific configuration as othrwise they can be mistankenly treated as non-Redcap UEs. But this can be clarified in MAC specifications without additional indication in RRC. |
| Intel | We have already made the following agreement in the last meeting:  1. In case of CFRA, in order to initialize the RACH parameters (such as rsrp-ThresholdSSB etc) and for CBRA fallback - UE uses RA parameters of Rel-15 common RACH resource or for RedCap common RACH resource
 |
| Samsung | Additional RACH config are not needed. CFRA with a) only deadicated preambles, ROs are shared and b) CFRA with dedicated preambles and ROs is already supported as per legacy.  |
| ZTE | According to current MAC spec, it seems clear that the RACH partition without feature combination will be used in case CFRA is triggered (the parameters for CBRA fallback are initialized based on this partition hence). |
| CATT | We think for CFRF which is triggered by the NW, the NW can figure out the UE by RA resource. So it is not necessary to add a filed saying which RACH config should be used. |
| LGE | It is straightforward to use legacy RACH configuration when a UE is performing CFRA. The exception should be handled only for several fallback cases from CFRA to CBRA (e.g., for RedCap UE). |
| Qualcomm | We already have an agreement on that (as cited by Intel above). We don’t see any clear use case which requires a reconsideration of that agreement. |
| vivo | No further discussion on CFRA. If some WI supports, we should have some feature-specific agreement at first. Then we can consider how to implement it in RICS. |
| Apple | Additional RACH configuraiton is not needed.  |
| OPPO | Follow the agreement. |

Summary: No additions or changes are introduced for CFRA in 38.331 at this point based on the previous agreement. RAN2 to determine if any clarifications are needed, e.g. to MAC etc.

1. No additions or changes are introduced for CFRA in 38.331 at this point based on the previous agreement. RAN2 to determine if any clarifications are needed, e.g. to MAC etc.

### 2.8.3 Other critical issues

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

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huwei, HiSilicon | The following proposals from R2-2206127 need to be discussed and fixed (the TPs are also provided):**Proposal 1: The usage and the absence of the *ssb-SharedRO-MaskIndex-r17* field should be interpreted differently depending on where *FeatureCombinationPreambles* IE is configured.**Comment: The current description of the field is incorrect and it has to be fixed. The signaling is OK, but it completely unclear at the moment how the UE should interpret this field withoutn further clarification in the field description.**Proposal 2: The group B related parameters in *FeatureCombinationPreambles* should be grouped together and it should be clarified that when these parameter are not provided in *FeatureCombinationPreambles*, the UE should consider there is only one preamble group configured for the RACH resources for the associated feature combination.**Comment: We need to clarify when groupB should be applied and when not. At the moment, it is unclear whether upon absence of groupB related parameters in FeatureCombinationPreambles, the UE uses a parameter directly from RACH config or whether it should simply assume groupB is not configured. We think it should be the latter, but it has to be clarified either way.**Proposal 3: When the *separateMsgA-PUSCH-Config* is not provided in *FeatureCombinationPreambles*, UE should apply the corresponding parameter in the *RACH-ConfigCommonTwoStepRA* of the BWP which includes the *FeatureCombinationPreambles* IE.**Comment: This has been agreed in the online session already, but the field description upon absence of separate PUSCH has to be added (please see the TP in the Tdoc)**Proposal 5: The 4-step RACH configuration and the 2-step RACH configurations of one feature combination should be provided in the same *AdditionalRACH-ConfigCommon*.**Comment: This is related to A022 which we shortly discussed during the online session. We think this has to be clarified as otherwise it is unclear how the chooses 4-step RACH resources when falling back from 2-step to 4-step RACH.Also, the following clarification from R2-2206126 is needed, to clarify that covEnh feature is only used for 4-step RACH: |
| ZTE | As noted in Z379, it seems that the current signalling structure allows additional RACH resources which are not associated with any feature combination. However, it is not clear to us if this is the intention and MAC spec assumes that there is one set of RACH resources that are feature combination agnostic (i.e. the legacy RACH resources). So, it is worth clarifying that network will always associate the additional RACH resources to some feature combination.  |
| LGE | In the current signaling stucture of *FeatureCombination* IE, the Rel-17 UE bahaviour with the spare fields is very unclear. Unless the UE operation is explicitly specified, the decoding of spare fields would be handled by general RRC error handling (as defined in Clause 10 of TS 38.331). However, as defined in clause 10.5 of TS 38.331, the Rel-17 UE will ignore the values of the spare fields which are not readable.

|  |
| --- |
| 10.5 Not comprehended fieldThe UE shall, when receiving an RRC message on any logical channel:1> if the message includes a field that the UE does not comprehend:2> treat the rest of the message as if the field was absent. |

In this case, the Rel-17 UEs may use the RA resource for the potential feature, even though it is not allowed. For example, when NewFeature is defined in later release, Rel-17 RedCap UE shall not use the RA partition associated with following FeatureCombination:FeatureCombination-r17 ::= SEQUENCE { redCap-r17 {true}  NewFeature(spare4) {true} }However, since the Rel-17 RedCap UE cannot comprehend the indication of NewFeature, the Rel-17 RedCap UE treat the FeatureCombination IE as if the field(i.e., NewFeature) is absent. Therefore, the Rel-17 RedCap UE would use the RACH partition associated with this FeatureCombination, which is wrong operation.In our understanding, if one of spare fields is set, Rel-17 UE shall NOT use that partition even though the other feature combinations are matched to the Rel-17 UE. Therefore, in order to clarify the UE behavior with undefined spare fields, one of the followings is needed:* Option 1: leave the laterThanRel17Features field in order to disable the RACH resource configured for potential features.
* Option 2: Specify the Rel-17 UE bahaviour when at least one of the spare fields is set to {true}.

In our view, since the exact definition of spare fields would not be determined in Rel-17, it is very hard to specify the UE operation with undefined field. Therefore, it is proposed to leave laterThanRel17Features field in the *FeatureCombination* IE (i.e., Option 1). |
| Apple | Related to RIL A022. Same comment as proposal 5 from Huawei. Current sepc is unclear on the RACH resource assocation between 2-step RACH and 4-step RACH for fallback case, and it worth some clarification. **Proposal 3: Confirm the 2-step RACH configuration and 4-step RACH configuration for fallback case are from the same *FeaturecombinationPreamble* and the same *AdditionalRACH-ConfigCommon*.**In addition, the link between the selected set of the Random Access resources in MAC spec (section 5.1.1b) and the RRC configuration (i.e*. AdditionalRACH-ConfigCommon, and FeaturecombinationPreamble)* is lack, and we should make it clear in the spec.  |

**Summary: The additional topics provided above need more consideration and also review in their implementation (and TPs) if agreed. Rapporteur suggest to postpone these to a phase 2 discussion. This discussion can be held in parallel to review of CR.**

1. Postpone other to a phase 2 section 2.8.3 discussion.

# 3 Conclusion

Based on the discussion the following is proposed:

[Proposal 1 Adopt the text proposal using 4 spares in FeautureCombination IE.](#_Toc103328057)

[Proposal 2 Adopt H537 with the additional correction.](#_Toc103328058)

[Proposal 3 Add extension markers in FeatureCombinationPreambles (outside wrapper sequence of *featureSpecificParameters*).](#_Toc103328059)

[Proposal 4 Adopt the text proposals for rsrp-ThresholdMsg3 in BWP-UplinkCommon above with the editorial correction “The field is mandatory if both set(s) of Random Access resources with MSG3 repetition indication and set(s) of Random Access resources without MSG3 repetition indication are configured in the BWP. It is absent otherwise”.](#_Toc103328060)

[Proposal 5 Discuss addition of the fields *feature-RA-PrioritizationForAccessIdentity-r17* and *ra-PrioritizationForAccessIdentity-r16* and verify if it is clear how the UE selects.](#_Toc103328061)

[Proposal 6 Adopt H902 but without the last sentence (This field is not configured in additionalRACH-ConfigCommon.)](#_Toc103328062)

[Proposal 7 Implement H902 with the addition of “and all RACH configurations” in field description.](#_Toc103328063)

[Proposal 8 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.](#_Toc103328064)

[Proposal 9 Implement H904 with the addition from HW. Discuss additional changes for legacy text with CR.](#_Toc103328065)

[Proposal 10 As a baseline no RACH partitioning specific capability is defined. RAN2 to discuss further if additional capabilities are needed in addition to the per feature capabilities.](#_Toc103328066)

[Proposal 11 No additions or changes are introduced for CFRA in 38.331 at this point based on the previous agreement. RAN2 to determine if any clarifications are needed, e.g. to MAC etc.](#_Toc103328067)

[Proposal 12 Postpone other to a phase 2 section 2.8.3 discussion.](#_Toc103328068)