**3GPP TSG-RAN WG2 Meeting #130** **R2-2504718**

**Malta, May 19th – 23rd, 2025**

**Agenda item: 8.5.4**

**Source: OPPO (Rapporteur)**

**Title: [AT130][112][NES] (OPPO)**

**Document for: Discussion and Decision**

# Introduction

This document collects the comments received during the following offline discussion:

* [AT130][112][NES] (OPPO)

 **Scope:** Discuss whether there is further specification impact to support feature and feature combination, and how to solve the issue if any.

 **Intended outcome:** Discussion summary in R2-2504718

**Deadline:** Comeback in CB session. 30min f2f offline discussion.

# Discussion

The issue comes from the following agreement

R2-2501088 Common signal/channel adaption ZTE Corporation, Sanechips discussion Rel-19 Netw\_Energy\_NR\_enh-Core

Proposal 4: RACH partitioning with all the features, i.e. RedCap, SDT, Slicing, and CE, and feature combinations, are supported for PRACH adaption in time domain.

[Apple]: We have two discussion points. 1) RACH adaptation is not modelled as RA feature(s), 2) Whether additional RACH resource can be applied to other existing feature(s). Seems all companies agreed with 1) [LG]: For 2), consider at least preamble partitioning using common RACH configuration should be supported. [OPPO, LG, ZTE, Apple]: Agree with 1). [Session chair]: What would be additional spec impact to support 2)? [Samsung]: No RAN2 spec impact is foreseen. With additional RACH resource, whether to configure legacy RACH resource or additional RACH resource is up to NW. Even for ASN.1, we can reuse what we have. [Ericsson]: Agree with Samsung. Do not see the need of the NW restriction.

* From R2 perspective, RACH adaptation is not modelled as RA feature(s).
* From R2 perspective, RACH partitioning with all the features, i.e. RedCap, SDT, and Slicing, and feature combinations, are supported for PRACH adaption in time domain.

**Observation-1: R2 excluded the support of CE based feature when it comes to RACH partitioning for additional RACH.**

And then based on the latest R2 agreement

R2-2503712 Remaining issues on common signal transmission adaptation Apple discussion Rel-19 Netw\_Energy\_NR\_enh-Core

 • Alt-1: addl-RACH-Config-Adaptation is placed under RACH-ConfigCommon

• Alt-2: addl-RACH-Config-Adaptation is placed under rach-ConfigGeneric

[Nokia, Ericsson]: Prefer Alt-2 since rach-ConfigGeneric is applied to all cases. [LG, OPPO]: It doesn’t make sense to include *ssb-perRACH-OccasionAndCB-PreamblesPerSSB* under *rach-ConfigGeneric.* [Apple]: RAN2 already agreed in some cases (e.g. IAB), RACH adaptation is not applied, but with alt-2, it can be applied to them as well if we follow the current spec. [Ericsson]: Understand the raised issues for Alt-2, however consider it’s not complicated to fix it. This decision may impact CFRA discussion. [OPPO]: We need this decision first, otherwise it will be difficult to make progress on CFRA. [Samsung]: Do not see any blocking issue with this agreement even for CFRA. If needed, additional RO configuration can be included in CFRA.

* Alt-1: LG, Samsung, OPPO, Apple, Qualcomm, CATT, Vivo, Huawei
* Alt-2: Nokia, Ericsson, NTTDCM, ZTE
* addl-RACH-Config-Adaptation is placed under RACH-ConfigCommon

Since additional RACH is to be configured within RACH-ConfigCommon, together with legacy RACH, while there is only one feature(-combination) based partitioning parameter in the RACH-ConfigCommon, it is not clear whether/how to apply this to additional RACH.

RACH-ConfigCommon ::= SEQUENCE {

 rach-ConfigGeneric RACH-ConfigGeneric,

 <Removed>

 featureCombinationPreamblesList-r17 SEQUENCE (SIZE(1..maxFeatureCombPreamblesPerRACHResource-r17)) OF FeatureCombinationPreambles-r17 OPTIONAL -- Cond AdditionalRACH

 ]]

}

**Observation-2: It is not clear how for a same featureCombinationPreamblesList-r17 to apply to two different RACH resources in a same RACH-ConfigCommon, i.e., legacy and additional RACH, given that the former allows partition of CE while the latter one disallow.**

So would like to check companies view on that.

Option-1a: A same featureCombinationPreamblesList-r17 applies to both legacy and additional RACH, and R2 revisit the conclusion so that CE is also applicable to additional RACH. And LS to R1 to inform conclusion on that to check if any concern.

Option-1b: A same featureCombinationPreamblesList-r17 applies to both legacy and additional RACH, and R2 keep the conclusion, allow mixing of CE feature and non-CE feature in the same RACH-ConfigCommon, and clarify in the MAC spec that if CE is applicable for random access procedure and RACH-ConfigCommon associated with selected random access resource set includes additional RO, UE does not use additional RO configured in this RACH-ConfigCommon.

Option-1c: A same featureCombinationPreamblesList-r17 applies to both legacy and additional RACH, and R2 keep the conclusion, but rely on network implementation to avoid mixing CE feature and non-CE feature in the same RACH-ConfigCommon. (i.e., if [feature combination including CE / CE-only feature] is included in featureCombinationPreamblesList-r17 as one of the associated feature(-combination):s, the additional RACH is not supposed to be included in this RACH-ConfigCommon for this featureCombinationPreamblesList-r17)

Option-2: Two different featureCombinationPreamblesList-r17/ featureCombinationPreamblesList-v19xy, while the former is used for legacy RACH, and the latter is for additional RACH.

Discussion: Based on the discussion, companies would like to avoid restriction on network configuration flexibility, and also to avoid impact to R1 due to the support of CE, so seems most are fine with Option-1b.

**Proposal 1: A same *featureCombinationPreamblesList-r17* in *RACH-ConfigCommon* applies to both legacy and additional RACH, and allow mixing of CE feature and non-CE feature in the same *RACH-ConfigCommon*, and clarify in the MAC spec that if CE is applicable for the random access procedure and *RACH-ConfigCommon* associated with the selected random access resource set includes additional RO(s), UE does not use the additional RO(s) configured in this *RACH-ConfigCommon*.**

# Conclusion

After the offline discussion, it is proposed to agree to the following:

# References

[1] R2-2503454 Discussion on adaptation of common signal channel transmission OPPO discussion Rel-19 Netw\_Energy\_NR\_enh-Core