3GPP TSG-RAN WG2#115-e R2-21xxxxx

Electronic meeting, 16th August – 27th August 2021

Agenda Item: 8.13.2.2

Source: OPPO

Title: Report of [AT115e][821][SON/MDT] 2-Step RA related SON (OPPO)

Document for: Discussion, Decision

# 1 Introduction

Regarding the 2-step RA related SON contributions in this RAN2#115e meeting, a summary of them has been given in [1]. According to [AT115-e][800][SON/MDT] Organizational Hu, the following email discussion has been assigned to be initiated during RAN2#115 meeting so that proposals 1-4 in [1] could be further converged and then submitted to the online discussion for potential agreements achieving:

[AT115e][821][SON/MDT] 2-Step RA related SON (OPPO)

**Scope:** Focus on the the proposal 1, 2, 3 and 4 in R2-2108840

**Intended outcome**: Report with Agreements in R2-21088963

**Deadline**: 11:00 UTC, Wednesday August 25th

      Intended outcome: Approved LS

      Deadline:11:00 UTC, Friday August 20th

This document aims to provide the summary of the opinions of different companies and based on that, rapporteaur could further conclude potentially easly agreements.

# 2 Discussion

## 2.1 RA type indication in RA Report

The related proposal have been made in [1] as follows:

**Proposal 1: RAN2 to agree that the RACH type is not needed to be included in the RACH report, since it could be easily inferred from other 2-step RACH specific information included in the RACH report.**

The reason why the summary rapporteaur draw this conclusion is that in the post RAN2 #113e meeting email discussion [8], 8 among 13 companies think the RA type can be inferred by the network according to the previously agreed 2-step RA specific information, e.g.,

**1. At least following RACH frequency related information should be included in RACH report for optimization of 2-step RACH:**

** msgA-FrequencyStart-r17**

** msgA-FrequencyStartCFRA-r17**

** msgA-SubcarrierSpacing-r17**

** msgA-SubcarrierSpacingCFRA-r17**

** msgA-FDM-r17**

** msgA-FDMCFRA-r17**

**2. UE includes the measured RSRP of DL pathloss reference obtained just before performing RACH procedure in 2step RA report. FFS how to reduce the report overhead.**

**Question-1: Do you agree with the proposal 1 associcated to implicit indication of 2-step RACH type in the RACH report:**

**P1: RAN2 to agree that the RACH type is not needed to be included in the RACH report, since it could be easily inferred from other 2-step RACH specific information included in the RACH report.**

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| **Company name** | **Agree with P1?** | **Comments** |
| Qualcomm | Agree | Fields included in the RA-report are sufficient to determine the RACH type. |
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**Rapporteur Summary:**

To be added later

## 2.2 Switching information in 2-step RA report

The related proposals have been made in [1] as follows:

**Proposal 2: RAN2 to discuss which option should be made for RACH type switch indication in the RACH report:**

* **Option 1: including an explicit switch indication in the IE related to the last/first RA attempt before/after the 2-step to 4-step RA switch.**
* **Option 2: including the parameter MsgA-Transmax in each PerRAInfo IE.**

As presented in [3], Option 2 only consumes 8 bits overload, while the Option 1 will need at most 200 bits for switching indication since each ***PerRAAttemptInfo*** IE needs to embrace 1-bit such indication. Bearing this in mind, rapporteaur suggest to go with Option 2：

**Proposal 2: RAN2 to agree to include the parameter MsgA-Transmax in each PerRAInfo IE in the RACH report for indication of the switching information from 2-step to 4-step RACH.**

**Question-2: Do you agree with the Proposal 2 associcated to the indication of the switching information from 2-step to 4-step RACH in the RACH report:**

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| **Company name** | **Agree with P2?** | **Comments** |
| Qualcomm | Disagree | I believe that option 1 is conditional inclusion of the switching, i.e. it is included only once upon the switching is performed. Therefore, the consumption there is a single bit consumption. |
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**Rapporteur Summary:**

To be added later

## 2.3 Reducing the reporting overhead of the measured RSRP of DL pathloss reference obtained prior to 2-step RACH procedure

The related proposals have been made in [1] as follows:

**Proposal 3: RAN2 to agree that the measured RSRP of DL pathloss reference obtained just before performing RACH procedure to be logged in 2-step RACH report is of per RACH procedure granularity.**

A FFS is left in the last RAN2 #114e meeting regarding how to reduce the report overhead regarding ‘including the measured RSRP of DL pathloss reference obtained just before performing RACH procedure in 2step RACH report’. Regarding this issue, two contributions [4][5] have been submitted in this meeting, they all support to have the indication per RACH procedure for reducing the overhead. As a result, the rapporteaur suggest keep the RAN3 as ablove.

**Question-3:Do you agree with the Proposal 3?**

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| **Company name** | **Agree with P3?** | **Comments** |
| Qualcomm | Agree |  |
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**Rapporteur Summary:**

To be added later

## 2.4 MSGA PUSCH related information

The related proposals have been made in [1] as follows:

**Proposal 4: RAN2 discusses the necessity of including the MSGA PUSCH resource related information in 2-step RA Report. FFS further details of the contents to be included in the RACH report.**

In detail, following information has been suggested by different companies to be included in the RACH report:

* A: the payload size transmitted in MSGA for a 2-step RACH attempt (from [4] Nokia)
* B: the group type of a preamble i.e., group type A or B (from [4] Nokia, [6] Ericsson)
* C: the MCS index(from [5] ZTE)
* D: the number of PRB per PO of the PUSCH resource(from [5] ZTE)
* E: the combination of start symbol and length and PUSCH mapping type(from [5] ZTE)
* F:PUSCH group information(from [5] ZTE, [6] Ericsson)
* G:Offset of lowest PUSCH occasion in frequency domain with respect to PRB 0(from [5] ZTE)
* H:The number of msgA PUSCH occasions FDMed in one time instance(from [5] ZTE)
* I: Indication of pathloss above or below the pathloss threshold for groupA/B (from [6] Erricsson)
* J:MSGA PUSCH resource information (from [6] Errcsson and [7] CMCC)

**To make a further step, the rapporteaur invites companies to show their preferences on the above set of information.**

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| **Company name** | **Preference on A-J (example of a possible Answer:A, C, D)** | **Comments** |
| Qualcomm | None | I believe PUSCH and payload used for RACH don’t change per RACH attempt. On successful RACH procedure, the network knows which parameters have been used for the RACH procedure. Therefore, no need to include these parameters in the RA-report. |
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**Rapporteur Summary:**

To be added later

# 3 Conclusion

To be added later.

# References

[1] R2-2108840, [Pre115-e][802][SON/MDT] Summary on agenda item 8.13.2.2 2-step RA related SON aspects, OPPO

[2] R2-2103093, Report of [Post113-e][852][NR17 SON/MDT] 2 step RA and other SON changes, CATT

[3] R2-2107822, The remaining Issues of RACH Report for 2-step RACH, CATT

[4] R2-2107507, Remaining Issues and New Aspects in 2-step NR UE RACH Report, Nokia

[5] R2-2108354, 2-step RA related enhancements, ZTE

[6] R2-2108418, 2-step RA information for SON purposes, Ericsson

[7] R2-2108542, SON Enhancement for 2-step RA, CMCC

[8] R2-2103093, Report of [Post113-e][852][NR17 SON/MDT] 2 step RA and other SON changes, CATT