[95e-47-IrregularBandwidths] - Version 0.0.5
RAN

3GPP TSG-RAN#95-e RP-220907

Electronic meeting, 17th -23rd March 2022

Source: Ericsson

Title: Moderator's summary for discussion [95e-47-IrregularBandwidths]

Agenda Item: 9.4.4

Document for: Discussion

1 Introduction

RP-220461 is a SID update that changes the completion date for the **Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths** from RAN#95-e to RAN#97. This is based upon the fact that there are open issues for the study and the completion level is 80%. The open issues listed in the SR are as follows:

- Signaling specifics (RAN2) need to be further checked regarding configuration of channel bandwidth using SIB1 signalling. RAN4#102-e [15]
- Evaluation based upon SI objectives of all irregular bandwidth approaches is required after all details of each approach some initial agreements are captured in TR 38.844: RAN4#101-bis-e [4], RAN4#102-e [7,20,21] however no conclusion has been reached.
- Further studies of UE receiver selectivity requirements for proposed methods.

RP-220461 does not contain any further revisions other than extending the completion of the SI.

2 Initial round

2.1 Collection of company views

Moderator proposal: Approve RP-220461, thus extending the SI

Feedback Form 1: Approve RP-220461, thus extending the SI

1 – T-Mobile USA Inc.

We agree with the proposed extension.

2 – AT&T GNS Belgium SPRL

We also support the proposed extension.

3 – MediaTek Inc.

On the final bullet point, ”study selectivity requirements” seems more of a work item objective. However, the SI requires no dedicated UE filters, so the only thing that can be required is that the UE complies with current 3GPP selectivity requirements.

4 – MediaTek Inc.

...for existing configurations

5 – ZTE Wistron Telecom AB

We are fine to extend the SI.

Just to align the understanding, extension of the SI means the SI will become an Rel-18 SI, not Rel-17 SI, right? Another point is that a more clear objective for this extended SI may be added to ensure that there would be less solutions still open, e.g., only one or two solutions at the most in the end of the SI.

6 – MediaTek Inc.

We would also like clarity that this SI now moves to Release 18.

7 – QUALCOMM JAPAN LLC.

We are fine to extend the SI but we should only extend for another quarter. We do not see a need to extend longer as it is unlikely we will find out anything new. We already have a good table with the comparison between the methods, this should be enough to make an informed decision if there will be a WI.

8 – CATT

we agree with the proposed extension. SI should be changed to a R18 SI.

9 – Huawei Technologies France

We are fine to extend the SI with 2 quarters. Since it is SI, which should be move to a R18 SI instead.

10 – Intel Corporation (UK) Ltd

We are fine with extending the SI for 1 or 2 quarters to complete the work.

Also, agree with MediaTek that some adjustment on the wording is needed for receiver selectivity.

The list of open issues may need to be adjusted to make the next steps clear:

- Impact on signalling regarding configuration of channel bandwidth using SIB1 signalling
- Impact on UE receiver selectivity performance for proposed methods
- Summary of evaluation of all proposed methods based on SI objectives

11 – China Mobile Com. Corporation

We are find with extending SI by 1Q to Rel-18.

12 – Apple GmbH

We agree with the proposal to extend the SI (whereupon it will become Rel-18 SI). We do not have a strong view on whether it should be extended by 1 or 2 quarter, but it seems more reasonable to extend it by 2 quarters because there will be only one technical meeting between the March and June RAN meetings. From that perspective September RAN meeting is a better target deadline for the SI.

13 – Ericsson LM

In our view, since the completion level is 80% and the 4 schemes remain open, then realistically 2 more quarters are needed. This was acceptable to all companies based on discussion on RAN4 reflector last week since number of open issues increased.

To Mediatek, Intel: The scope of this thread is RP-220461, which is the SI extension (only change is the final RAN), but your comments seem to be on the status report. The status report is not flagged. (The open issues as indicated by Intel would be OK for us if the SR would be open though.)

Just to confirm, if the SI is extended then it automatically becomes a Rel-18 SI.

To ZTE: We would be Ok to add an objective that the number of schemes should be narrowed down to 1-2, but we would like to see whether other companies agree.

14 – China Telecom Corporation Ltd.

We think one quarter extension is enough, and two quarter extension is also acceptable since companies will have more time to discuss the down-selection of solutions in Q3 (considering that Q2 will be very busy on finalizing Rel-17 core part).

15 – VODAFONE Group Plc

We are fine with the proposed extension (to Rel-18).

16 – Nokia UK

We support the proposed extension.

17 – MediaTek Inc.

@Ericsson... you are correct. But in order to understand how long to extend the timeline we need to agree what needs to be done I guess. On the SR, the completion level should have been in yellow I think.

2.2 Summary of initial round

All companies that commented agreed that the Study Item should be extended, and hence become a Release 18 Study Item.

Proposed agreement: The Study Item is extended to Release 18.

Some different views were expressed about whether the extension should be for one quarter or two quarters. The proposed extension is two quarters and 7 companies stated that either they agree with 2 quarters or agree with the proposed extension. 3 companies indicated that they prefer a one quarter extension.

ZTE proposed to add an objective to the SI stating that at most 1 or 2 solutions should be identified by the end of the SI.

Mediatek and Intel provided some clarification of the open issues in order to assist in deciding on the length of the extension. Since the Status Report was not flagged, it is presumed that these are proposed in this discussion as a clarification of the SR to assist in assessing the extension rather than an update of the SR, but the proposing companies can comment further in the second round.

3 Intermediate Round

3.1 Duration of the SI extension

Two possibilities have been proposed for the length of the extension; 1 quarter or 2 quarters. Please indicate and motivate your preference based on the completion level and open issues. Refer to the discussion on open issues in 3.3 if needed.

Option 1: 1 Quarter

Option 2: 2 Quarters

Feedback Form 2: Duration of the SI extension

1 – T-Mobile USA Inc. Option 1. We prefer to complete this work as soon as possible so we can move on to a Work item. If they work cannot be completed in one quarter, then a second extension may be needed.
2 – AT&T GNS Belgium SPRL We prefer Option 1 but can accept Option 2.
3 – China Telecom Corporation Ltd. As commented in the initial round, we think one quarter extension is enough, and two quarter extension is also acceptable since companies will have more time to discuss the down-selection of solutions in Q3 (considering that Q2 will be very busy on finalizing Rel-17 core part).
4 – Intel Corporation (UK) Ltd Taking into account rapporteur clarifications, 2 quarters extension can be an acceptable approach.

5 – QUALCOMM JAPAN LLC.

We prefer 1 quarter. We already spent a lot of time in this SI, we do not think a long extension will change anything. If we need input from other WGs, it is unlikely 2 quarters would be enough because we only have 1 meeting in each of the next 2 quarters.

6 – Apple GmbH

Since we have only one technical meeting in May and the potential follow-up WI will be anyway Rel-18 WI, it is more prudent to allocate two quarter extension. Ad if the SI is completed by June, then we can finish it earlier.

7 – China Mobile Com. Corporation

We support option1.

8 – ZTE Wistron Telecom AB

After being extended, it is a Rel-18 SI. We would prefer to see a 2-quarter extension to allow RAN4 to make further down-selection on the current 4 solutions.

9 – Ericsson LM

We prefer 2 quarter extension which is realistic timeline given the amount of time remaining.

10 – Nokia UK

Option 2. Two quarters are needed to complete the technical study on the open items listed in SR.

11 – Huawei Technologies France

We prefer option 2 with two quarters extension.

12 – Ericsson France S.A.S

From the current state of the discussion, it seems that 5 companies prefer a 1 quarter extension, of which two would also be OK for a two quarter extension. 6 companies argue for a 2 quarter extension.

For the following discussion on 1-2 schemes, it seems that there is not a consensus to include an SI objective on narrowing to 1-2 schemes, but most companies think it would be useful to have enough work on the technical issues that there is a basis to converge. In fact, agreeing on which schemes to consider in a WID discussion would be a necessity to start a focused WI. From that perspective, it is important that the SI has progressed far enough that, even if a down-selection is not made during the SI, a down-selection is possible as part of the WID discussion.

Wit this in mind, a moderator proposal for the WF is as follows:

Agree 2 quarter extension, since the completion percentage, open issues and number of candidate schemes imply more than one more meeting will be needed for convergence. Also note that, in case after 1 quarter it is after all feasible to down-select to 1-2 schemes in a WID discussion then the SI could be declared complete in June.

(There may not be enough time for commenting now, so this issue will be open in the next round too)

3.2 Inclusion of an objective to narrow down the number of schemes

ZTE proposed to include an objective to narrow down the number of schemes during the Study Item phase. This would be included into the SID revision if agreeable.

Moderator proposal (for discussion) on potential additional objective based on ZTE suggestion:

The Study Item shall identify at most 1 or 2 solutions at the outcome

Feedback Form 3: Addition of objective to identify 1 or 2 solutions

1 – T-Mobile USA Inc. It would be great if the SI could identify at most 1 or 2 solutions, but we don't think that will be possible in the SI. Hopefully only one or two solutions would be included in a WID for a follow-on WI.
2 – AT&T GNS Belgium SPRL We agree with T-Mobile USA that it will be unlikely that the SI will be limited to 1 or 2 solutions. We don't think that the additional objective is needed. It could further delay the completion of the SI due to contentious discussions on down-scoping. The primary solutions can be identified in the WI based on the outcome of the SI.
3 – China Telecom Corporation Ltd. The down-selection of solutions can be done when concluding the SI, or drafting the WID. The former one, i.e., in the conclusion of SI, is preferred, to avoid extensive discussion in RAN plenary.
4 – Intel Corporation (UK) Ltd Ideally, RAN4 should strive to down-select the candidate solutions. Meantime, taking into account the progress we think that adding such objective may result in longer discussion and inability to conclude the SI on time. Therefore, we prefer not to introduce such objective and down-selection can be done once SI is converted to WI. We also think that a follow up WI shall focus on 1 or 2 solutions at most.
5 – QUALCOMM JAPAN LLC. Based on the discussion so far, we do not think it would be possible for RAN4 to downselect 1 or 2 solutions. This is a study so it should be enough to just document the proposed methods and have a meaningful comparison between them. We can decide which methods to specify if/when a WI would be started. We should be able to conclude the SI without any clear recommendation on which method to pursue.
6 – Apple GmbH It is usually the case that we always strive for minimising number of proposed solutions as the outcome of an SI. Nevertheless, it is a bit difficult to see (at least now) whether outcome of this SI will be limited to 1 or 2 options.

7 – China Mobile Com. Corporation It woud be preferable if the outcome of SI can be limited to 1 or 2 options. This depends on the discussion and RAN4 consensus. It may not be necessary to have such agreement of limiting option numbers in this pleanry.
8 – MediaTek Inc. We would hope that if there is a WI then it would not contain more than 1 solution. Not sure it is meaningful to make recommendations now though.
9 – ZTE Wistron Telecom AB We support the proposal, and this should be the main target outcomes of the study item. We understand how it may be difficult under the current situation, however, if a follow-up work item is planned, anyway the down-selection has to be done, just a matter of time.
10 – Ericsson LM While ZTE objective is good in principle but it maybe difficult to include it right now.
11 – Nokia UK A new objective to identify 1-2 solutions is not needed, and adding it would rather be harmful for ensuring completion of the technical study. RAN4 needs to concentrate on completing the identified open aspects for the SI, and discussion on selecting some solution(s) can be postponed to the scoping of a potential follow-up WI.
12 – Huawei Technologies France The ideal situation is to converge to 1 or 2 solution in the end of SI, but that would be difficult. For the extended SI, some clear targets would helpful.
13 – Ericsson France S.A.S It seems we can conclude from this that there is no consensus to update the SID objectives, but most companies think that it would be desirable to at least have a basis to converge ready for a WID discussion, even if the convergence is not formally achieved in the SID.

3.3 Clarification of open issues for information

Intel have proposed the following clarification of the open issues:

- Impact on signalling regarding configuration of channel bandwidth using SIB1 signalling
- Impact on UE receiver selectivity performance for proposed methods
- Summary of evaluation of all proposed methods based on SI objectives

It is understood that these issues are elaborated in order to assist with estimating the duration of the extension. They will not be added as objectives to the SID, and the Status Report will not be updated.

The FF can be used to comment on the open issues. It is not proposed to formally make any decision for issue 3.3, but the open issues list can be used for justifying the proposed extension length.

Feedback Form 4: Clarification of open issues for information

1 – Intel Corporation (UK) Ltd

We agree with moderator comment that practically our comments are related to the SR, which needs to be flagged. Meantime, since the scope of this thread is approval of SI conversion to Rel-18 we think it is still helpful to clearly understand what companies are expected to do in the next half a year. Our proposals in the initial round aim to further clarify the remaining open issues. If common understanding is reached, we do not see a problem to capture conclusions in the email discussion summary.

2 – QUALCOMM JAPAN LLC.

Regarding the 1st bullet, is the intent to ask for further input from RAN2? That would likely require 3 quarters extension, please see our comments for 3.1. If it is contained within RAN4, we should be able to asses in 1 meeting.

Regarding the 2nd bullet, we do not think RAN4 will be able to assess the actual degradation because this is implementation dependent and there are no RF requirements based on which the performance can be derived. Also, the degradation will depend on the deployment scenario so this could be a large of amount of work without and meaningful conclusion. We suggest to remove this bullet.

Regarding the 3rd bullet, in our understanding most of this work is already concluded, we agree a TP with a good comparison table in the previous quarter.

3 – MediaTek Inc.

Regarding Ericsson comment that the status report would not be adapted as it was not flagged, as we were actually discussing what is needed to extend the work here, then it should still be possible to adapt the SR if needed to align with the WF in this discussion. We agree with the Qualcomm comment on Rx selectivity performance, and this point is also captured in the SR (so could at least be softened in the SR). We are not studying requirements for selectivity in a study item. That would be a work item objective.

4 – ZTE Wistron Telecom AB

- Impact on signalling regarding configuration of channel bandwidth using SIB1 signalling

  This may be only applicable to some of the solutions. It could be revised to ”Impact on signalling regarding the support of the proposed solution”

- Impact on UE receiver selectivity performance for proposed methods

  This may not be applicable to all solutions.

- Summary of evaluation of all proposed methods based on SI objectives

  The summary could be a basis for RAN4 to make further down-selection.

5 – Ericsson LM We are fine with the Intel suggested clarification. As commented they can be captured in the conclusion of the summary document.
6 – Nokia UK The list of open items is aligned with SR and therefore acceptable. For the second bullet on UE selectivity performance, it is indeed not only about requirements but also the performance impact when irregular BW is configured. It is important to keep this in the scope of the study.

3.4 Summary of intermediate round

Duration of the SI extension

From the current state of the discussion, it seems that 5 companies prefer a 1 quarter extension, of which two would also be OK for a two quarter extension. 6 companies argue for a 2 quarter extension.

For the following discussion on 1-2 schemes, it seems that there is not a consensus to include an SI objective on narrowing to 1-2 schemes, but most companies think it would be useful to have enough work on the technical issues that there is a basis to converge. In fact, agreeing on which schemes to consider in a WID discussion would be a necessity to start a focused WI. From that perspective, it is important that the SI has progressed far enough that, even if a down-selection is not made during the SI, a down-selection is possible as part of the WID discussion.

With this in mind, a moderator proposal for the WF is as follows:

- Agree 2 quarter extension, since the completion percentage, open issues and number of candidate schemes imply more than one more meeting will be needed for convergence.
- Also note that, in case after 1 quarter it is after all feasible to down-select to 1-2 schemes in a WID discussion then the SI could be declared complete in June.

Inclusion of an objective to narrow down the number of schemes

There is no consensus to include an additional objective in the Study Item

Discussion of the open issues

There was not a convergence on the issues. It is proposed to close this discussion and focus on agreeing the duration in the final round.

4 Final round

4.1 Duration of the SI extension

Moderator proposal:

- Agree 2 quarter extension, since the completion percentage, open issues and number of candidate schemes imply more than one more meeting will be needed for convergence.
    - This is achieved by approving RP-220461
- Also note that, in case after 1 quarter it is after all feasible to down-select to 1-2 schemes in a WID discussion then the SI could be declared complete in Jun

Feedback Form 5: Final round comments

1 – Intel Corporation (UK) Ltd The moderator proposal is fine for us.
2 – T-Mobile USA Inc. The proposal is fine for us.
3 – AT&T GNS Belgium SPRL We support the moderator proposal.
4 – QUALCOMM JAPAN LLC. We are fine with the proposal but if deadline is pushed by two quarters, it's unlikely we would finish in just 1 meeting.
5 – Huawei Technologies France We are ok with the moderator proposal.
6 – ZTE Wistron Telecom AB We are fine with Moderator's proposal.
7 – China Mobile Com. Corporation OK with moderator proposal.
8 – China Telecom Corporation Ltd. We are ok with the moderator proposal.
9 – Ericsson LM We are also Ok with the moderator proposal.
10 – Nokia UK In June we should go through the regular process of checking whether there are open issues and close the SI only if it really is complete. We do have sympathy for the sentiment in the moderator's proposal, but the down-selection of schemes shall be based on their merits and not on whether some schemes are

ready 1 quarter earlier than other schemes. Therefore, we suggest to approve RP-220461 without further recommendations as regular plenary process covers those.

5 Summary

During the final round, 9 companies indicated that they were OK with the moderator proposal, whilst Nokia indicated that they would prefer to simply approve RP-220461 without further recommendations.

The moderator understands that the concern from Nokia is that it could be that if the evaluation of one of the schemes completes earlier than the others then it could be that it would be prioritized just because it is finished earlier. However, the clarification was added in order to consider the concerns of companies that take the view that the study may, after all be able to finish in May. In order to balance companies concerns, the moderator has added a further bullet to address the Nokia concern.

Agree 2 quarter extension, since the completion percentage, open issues and number of candidate schemes imply more than one more meeting will be needed for convergence.

- This is achieved by approving RP-220461

Also note that, in case after 1 quarter it is after all feasible to down-select to 1-2 schemes in a WID discussion then the SI could be declared complete in June

- Feasibility of down-selection to 1-2 schemes should be based on considering conclusions on the merits of the schemes, not because the evaluation of some schemes is complete in June whereas for others it is not.

6 References

1. RP-220461, Revised SID: Study on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths, T-Mobile, Ericsson, RAN#95-e
2. RP-220460, Status report for SI Study on efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths, Ericsson, RAN#95-e