[97e-12-R18-Positioning] - Version 0.0.5
RAN

3GPP TSG-RAN Meeting #97eRP-222572

Electronic, 12 – 16 September 2022

Agenda Item: 9.2.5

Source: Email discussion moderator (Intel)

Title: Email discussion summary for [97e-12-R18-Positioning]

Document for: Discussion and decision

1 Introduction

This document reports on the following email discussion during RAN#97-e:

[97e-12-R18-Positioning]

Input contributions covered: RP-222015, 2076, 2143, 2257, 2259, 2429, 2450, 2480

2 - Spectrum to be considered for sidelink positioning

The objectives section of the SID [RP-222257] includes the following note which requires discussion a RAN#97:

- Note: When the bandwidth requirements have been determined and the study of sidelink communication in unlicensed spectrum has progressed, it can be reviewed whether unlicensed spectrum can be considered in further work. Checkpoint at RAN#97 to see if sufficient information is available for this review.

All the following tdocs discuss the this note and propose some way forward:

- RP-222015 Discussion on the scope of Rel-18 sidelink positioning LG Electronic
- RP-222076 Views on SL positioning over unlicensed spectrum in R18 OPPO
- RP-222143 Views on sidelink positioning in unlicensed spectrum vivo
- RP-222259 Consideration of unlicensed spectrum for SL positioning in Rel-18? Intel
- RP-222429 Views on SL positioning spectrum requirements for V2X use case ROBERT BOSCH GmbH
- RP-222450 Discussion on the scope of Rel-18 NR SL positioning ZTE, Sanechips
- RP-222480 On Sidelink Positioning in Unlicensed Spectrum Apple Inc.

From the contributions there are 3 proposals for possible ways forward:

1. Do not add unlicensed spectrum to the scope of the SI [LG, ZTE, Apple]
2. Add unlicensed spectrum to the scope of the SI [OPPO, Bosch]
3. Defer decision to a future RAN plenary (e.g. RAN#98) [vivo, Intel]

Furthermore, contribution RP-222450 (ZTE) makes a proposal regarding FR2 spectrum:

- FR2 should not be included in the scope

2.1 Initial Round

Companies are requested to provide their feedback to the 3 possible ways forward with regard to unlicensed spectrum, and to provide their feedback to the proposal to exclude FR2 spectrum the SI scope.

Feedback Form 1: Spectrum to be considered for sidelink positioning - Initial Round

1 – vivo Mobile Communication Co.

As indictated in our contribution, there are the following oberservations: as of RAN1#110, RAN1 mainly discussed positioning accuracy requirements and evaluation assumptions, and did not output any performance observations for sidelink positioning bandwidth requirements. Furthermore, current progress on SL-U in RAN#97e is not enough for review of whether unlicensed spectrum for positioning can be considered or not.

Thus we are ok to either defer the check point to later meetings or drop the discussion in Rel-18 considering large amount of workload.

We are also ok to drop discussions for FR2 in Rel-18.

2 – NTT DOCOMO INC.

[DCM] Dropping unlicensed/FR2 from SL positioning is our preference. If unlicensed spectrum and FR2 are added, the scope becomes so large. In addition, SL-U is a big topic for Rel-18 SL and deciding the details would not be early. SL positioning in unlicensed spectrum should follow the details of SL-U, but there would be no time to do so.

As 2nd preference, to defer the check point is also OK (though we do not think situation changes significantly).

3 – ZTE Corporation

We support dropping unlicensed/FR2 spectrum from Rel-18 SL positioning scope. SL-U discussion for communication is ongoing in another RAN1 agenda, it is unclear how control channel, radio access, etc. are designed before Rel-18 finished. However, SL positioning design may highly relay on SL-U control and radio access design. Hence, it is risk to start unlicensed SL positioning in parallel with SL-U communication. For FR2 spectrum, it is hard to be supported since FR2 SL communication is likely not supported in Rel-18.

4 – ROBERT BOSCH GmbH

As in our TDoc (supported by other automotive companies), we see lots of restrictions in the licensed and ITS spectra to achieve the required V2X positioning accuracy. Therefore, we need to acknowledge the necessity to expand to unlicensed spectrum to overcome this limitation.

However, if there are concerns on the SL-U progress in the parallel SL-Evo in Rel-18, we are happily proposing the following (both):

- Adapt the SID to defer the study sidelink positioning unlicensed to RAN#98-e

- Acknowledge the necessity of expanding beyond the limited ITS spectrum at least for out-of-coverage scenarios

5 – Apple Benelux B.V.

We support dropping both unlicensed and FR2 spectrum. As indicated in our Tdoc,the BW requirements have not been determined in Rel-18 sidelink positioning as the EVM and assumptions have just been determined. Secondly, the status of the channel access mechanisms and physical design of SL unlicensed are such that there is not enough of a foundation to build the techniques required for sidelink positioning in the unlicensed spectrum. As such, unlicensed spectrum should not be considered in further work for sidelink positioning.

6 – Sony Europe B.V.

We think defer decision to a future RAN plenary meeting is a good way forward at this early stage.

7 – CATT

Our preference is to exclude unlicensed spectrum from R18 SI, or at least, to defer the decision to a future RAN plenary. R18 is the first release for SL positioning, our preference is to focus on the basic functionalities. 3GPP has just started working on the SL data communication in unlicensed spectrum and the SL positioning in R18, it would be better to consider SL positioning in unlicensed spectrum in a future release after the completion of SL data communication in unlicensed spectrum and the SL positioning in R18. At that time, we will have a solid foundation for developing SL positioning in unlicensed spectrum. For a similar view, we also prefer not considering FR2 in SL positioning in R18.

8 – Classon Consulting

[for FUTUREWEI] OK to defer. It does not seem like we have reached the ”When the bandwidth requirements have been determined ” gate.

9 – Qualcomm Incorporated

Our evaluations in RAN1 showed that the bandwidth available for V2X and public safety is not sufficient to meet accuracy requirements. Unlicensed spectrum provides a solution to the bandwidth issue. On the other hand, we understand that SL-U also needs to advance to support using unlicensed spectrum for sidelink positioning. Hence, we are ok to either explicitly add unlicensed spectrum to WID scope this meeting (Option 2) or to defer until more information is available about the status of SL-U and potential workload (Option 3)

10 – LG Electronics UK

We think the condition ”When the bandwidth requirements have been determined” in the note of the SID is not reached yet, thus Option 2 is not feasible. Our preference is to take Option 1 in order to focus on the basic functionality of SL positioning in this release. We wonder how Option 3 can work as this SI is scheduled to complete in RAN#98-e; does it mean that the scope of unlicensed band SL positioning will be directly added to the normative work without having a study for it?

11 – HUAWEI TECHNOLOGIES Co. Ltd.

We support proposal 3.

At this point in time, it is not possible for RAN plenary to make an informed decision on the necessity of supporting unlicensed spectrum for sidelink positioning because RAN1 has not yet discussed the evaluation results and was still finalizing evaluation assumptions at the August WG meeting. Therefore, there isn't yet any RAN1 observation on the channel bandwidth required for meeting the sidelink positioning requirements of the various use cases agreed by RAN1. A decision on the support of unlicensed spectrum should be postponed to RAN#98, and could directly apply to the subsequent WI phase.

We would like to note that direct discussion on unlicensed spectrum is not part of the current scope of the SI, pending review by RAN. The current task in the SID is to assess the bandwidth needed to meet the positioning requirements, which can be performed by RAN1 without the need to directly discuss the type of spectrum. Therefore, it is not the right time for proposals 1 and 2.

Regarding FR2, we note that evaluation assumptions for FR2 have been agreed by RAN1, and evaluations for FR2 are optional. We don't see a reason to exclude FR2 from the study item as long as results could be provided by some companies, and we would prefer for RAN1 to be able to reach observations on the performance of SL positioning techniques in FR2 by the end of the study item (Dec 2022) if possible. A decision to target FR2 for the normative phase of the work can be made at RAN#98, according to the status of FR2 sidelink.

12 – Beijing Xiaomi Mobile Software

Although RAN1 didn't make conclusion on bandwidth requirement for sidelink positioning, some initial simulation results reflect that both set A (1.5m accuracy) and set B(0.5m accuracy) can not be achieved with 20MHz bandwidth and set B can not be achieved with 40MHz bandwidth. So unlicensed band (FR1 BW up to 80MHz) would be beneficial at least for countries support only less than 40MHz BW ITS band. On the other side, considering the progress on the Sidelink unlicensed and Sidelink positioning, we are fine to defer the decision to RAN#98. So we support both option 2 and option 3.

13 – InterDigital

Our preference is “Do not add unlicensed spectrum to the scope of the SI”. We are also ok with “Defer decision to a future RAN plenary (e.g. RAN#98)” if the majority prefers.

Since the use of unlicensed spectrum is still being studied, we prefer to wait until the framework for the use of unlicensed spectrum is established.

We also support to exclude FR2 spectrum from the SI. The use of FR2 is not established for SL communication and we prefer to wait for the framework to mature.

14 – Beijing OPPO Com. corp.

We support Option 2.

As mentioned in our contribution, 1) accuracy requirements determined by RAN1 for the use cases (V2X, Public safety, commercial, IIoT) are all equal or less than 1m, 2) the maximum available SL bandwidth on ITS/licensed band is 40 MHz, 3) according to the evaluation results of the August RAN1 meeting 40 MHz cannot reach 1m accuracy, therefore, in our view unlicensed spectrum is definitely necessary for SL positioning in R18, to spend one release for an item that cannot meet the demanded requirements is not advisable.

Additionally, RAN1 has already made some progress on SL-U, in particular most of issues that should be considered for channel access and physical channel design are clear after 2 meetings discussion. As SL PRS needs large bandwidth and can meet OCB/PSD requirement naturally, the work as physical channel design in SL-U may not be needed for SL positioning on unlicensed carrier. As to channel access, we see most issues being considered in SL-U should also be considered for SL positioning on unlicensed carrier, and need same or similar solutions. So, in order to complete SL positioning on unlicensed carrier in R18, it is beneficial to start the discussion from now on to sort out, e.g., which issues being considered in SL-U also exist here, and whether to introduce new solutions or to reuse solutions in SL-U, etc..

With regard to FR2, in our understanding it is included in the scope but w/o specific optimization.

15 – SHARP Corporation

We prefer Option 1, i.e. dropping unlicensed/FR2 for Rel-18 SL positioning. R18 SL-U discussion is not mature yet to start SL positioning for unlicensed.

As for Option 3, we have the same question as LG. Not sure if it implies potential extension of study phase or it talks about the scope of the normative work item phase.

16 – CEWiT

For SL-U base positioning we support option 3. Present study in RAN1 is not sufficient to extend support of positioning over SL-U so we prefer to defer the decision for next RAN plenary i.e. RAN#98.

Regarding FR2, we support to study the SL positioning for FR2 as optional case. Companies should be allowed to provide the evaluation results and observation should be noted in TR.

17 – Samsung R&D Institute UK

About the spectrum to be considered for sidelink positioning, we prefer the first option (Do not add unlicensed spectrum to the scope of the SI).

As captured in the current SID in the below

- Note: When the bandwidth requirements have been determined and the study of sidelink communication in unlicensed spectrum has progressed, it can be reviewed whether unlicensed spectrum can be considered in further work. Checkpoint at RAN#97 to see if sufficient information is available for this review.

We think that sufficient information is not yet available, as we could not reach the condition in the above Note yet (Namely, the bandwidth requirement has not been determined and there is not much progress on the sidelink communication objective in unlicensed spectrum). Hence, we cannot consider unlicensed spectrum in further work for sidelink positioning at this time.

About FR2, our preference is also 'Do not add FR2 in the scope'. Unlike the above issue, this issue was not captured in the SID. So, we are OK not to discuss this issue in RAN.

Both unlicensed and FR2 for sidelink are not specified features and these are on-going issues in Rel-18 Sidelink. So, we prefer to defer study/work on sidelink positioning for unlicensed spectrum until these features (SL-U and SL in FR2) are first specified.

18 – Nokia Denmark

On unlicensed spectrum:

Nokia support #3. Defer decision to a future RAN plenary (e.g. RAN#98) since there has not been sufficient progress in study of sidelink communication in unlicensed spectrum in Rel.18 SL Evolution.

On FR2:

FR2 can still be used for positioning even though the SL beam forming/management is yet to be studied (or picked up) in Rel.18 SL Evolution.

19 – KT Corp.

Work on SL-U is on-going and SL operation on FR2 is to be decided in this plenary. At this point I don't see strong motivation to add Unlicensed/FR2 sidelink positioning at this moment.

20 – Ericsson LM

We support option 1. Considering the limited progress of SL-U for data, and the amount of work left in the positioning SI, we do not see a way to take on the work on SL-U positioning in the SI time frame.

We also agree not to consider FR2-specific positioning features for SL-positioning.

21 – MediaTek Inc.

We see value in the bandwidth made available by SL-U, so we tend to support option 2. However, we acknowledge that this is still a work in progress in RAN1, so we are OK also with option 3.

Regarding FR2, we have the same understanding as OPPO: FR2 is not excluded, although specific optimisations for it are not in scope. We don't see a need to change the status in this respect.

22 – TOYOTA Info Technology Center

We agree with Bosch´s view on the necessity to expand to unlicensed spectrum.

23 – China Mobile E-Commerce Co.

Our view is to drop unlicensed spectrum for SL positioning in Release 18. The current scope of Rel-18 POS is quite heavy, and it is not preferred to introduce evaluation and study of unlincensed spectrum, in the first place. On the other hand, as we commented several times during the discussion of the new SID, no baseline of SL over unlicensed has been defined yet. Hence, it is reasonable to drop SL positioning over unlicensed spectrum.

For the study on FR2, we are either fine with drop the corresponding study, or postpone to the check poitn in RAN#98.
24 – China Unicom We support to drop unlicensed spectrum and FR2 in R18.
25 – Intel Corporation (UK) Ltd As RAN1 has not yet converged on any observations regarding bandwidth requirements as part of the ongoing studies and the divergent views on scope and potential significance of unlicensed bands , it would be prudent to defer the consideration of SL-U for positioning to RAN #98. During that time, improved clarity on: (i) bandwidth requirements from perspective of SL positioning, and (ii) specifying SL-U for communication may also be expected, to better guide the decision for Rel-18.

2.2 Summary from Initial Round

Unlicsensed spectrum:

A common observation from many companies was that RAN1 has not yet concluded its evaluation of the sidelink positioning bandwidth requirements. A small number of companies argued that although RAN1 has not yet concluded the bandwidth requirements, the evaluations have shown that licensed and ITS spectrum available for public safety and V2X will not be sufficient for positioning. Based on this situation, it is clear to the moderator that we will not be able to agree to add unlicensed spectrum to the SI objectives at this meeting (i.e. option 2 cannot be agreed).

Between option 1 and option 3, company opinions were very evenly split. A few (3) companies that supported to not include unlicensed spectrum within the Rel-18 SI, were also OK to defer the decision to RAN#98. Based on this the moderator's proposal is to defer the decision to RAN#98, when RAN1 should completed their evaluation of the bandwidth requirements for sidelink positioning and the decision may be easier to make with the new information available.

Some companies questioned how, with the SI due to complete at RAN#98, unlicensed spectrum could be added at the next meeting. On this point the moderator view is that this could be resolved in some way, for example one possible way may be to include a study objective specifically for unlicensed together with the other WI scope objectives (many of our Rel-18 WIs have one or more objectives that start with some study phase).

- **Moderator's proposal 1**: Defer checkpoint on unlicensed spectrum to RAN#98 (to be reflected in minor update to SID)

FR2:

Not all companies commented on the question of FR2 spectrum raised by ZTE in RP-222450. Among those that commented there was a majority in favour to excluding FR2 spectrum from the current SL positioning

evaluations. However, it was also pointed out that RAN1 has agreed evaluation assumptions for FR2 and agreed that it is optional for companies to provide results for FR2. Given this status in RAN1, it may be preferable to let RAN1 conclude their study and for to make a decision at RAN#98 which spectrum cases should be included in scope of the follow on WI. Therefore the moderator's proposal is:

- **Moderator's proposal 2**: Do not exclude FR2 from the SL positioning study (no change to SID required)

2.3 Intermediate Round

Companies are requested to provide their feedback to **Moderator proposal 1** and **Moderator proposal 2.**

Feedback Form 2: Spectrum to be considered for sidelink positioning - Intermediate Round

1 – FirstNet Do not exclude FR2 from the SL positioning study.
2 – TOYOTA Info Technology Center We are fine with the proposal to defer checkpoint to RAN#98e for now. We also agree with the proposal to not exclude FR2 from the study item.
3 – AT&T GNS Belgium SPRL AT&T supports the existing SID objectives (no change necessary) and have a checkpoint for RAN#98e.
4 – InterDigital We are ok with moderator's proposal 1/2 for the progress.
5 – Intel Corporation (UK) Ltd Support Moderator's Proposals 1 and 2.
6 – MediaTek Inc. We support the moderator's proposals 1 and 2.
7 – Classon Consulting [for FUTUREWEI] support both proposals
8 – ROBERT BOSCH GmbH We support the moderator's proposals 1 and 2

9 – Beijing Xiaomi Mobile Software

We support moderator's proposals 1 and 2.

10 – LG Electronics UK

For proposal 1, while we understand moderator's intention, we are not sure if it is a proper way of handling a potential technical topic. SID is supposed to describe what to be studied, and thus there is no need to write something for which WGs have no plan to conduct a study during the SI. The option the moderator mentioned is about how to write the follow-up WID, and it is a usual business for RAN to consider various aspects like the outcome of multiple cross-related items when approving an WID.

We are fine with proposal 2.

11 – NTT DOCOMO INC.

OK with the proposals 1 and 2.

12 – ZTE Corporation

For proposal 1, we have the similar feeling as LG. It is weird to directly determine unlicensed spectrum of SL positioning for WID without any study of feasibility/analysis/benefit in SI. We should note that larger BW requirement is not equal to SL-U. Even 100MHz is needed, how it works in unlicensed spectrum is a separate issue. Both benefit and negative impact should be analyzed first.

For proposal 2, we are OK **not to change the SID at this meeting**. However, we don't agree the wording 'Do not exclude FR2 from the SL positioning study'. This issue may be discussed in next RAN meeting depending on the progress of SL communication.

13 – Qualcomm Incorporated

We are ok with the moderator's proposals.

14 – vivo Mobile Communication Co.

We are ok for the moderator's proposal.

15 – Beijing OPPO Com. corp.

We are fine to defer the decision to RAN#98, but at that time the bandwidth requirements should have already been determined by RAN1, in addition, maybe we should say "whether/how unlicensed spectrum can be considered…" to avoid concerns from some companies. In general, seems more revisions are needed on the Note in the SID, our suggestion is replacing the "Note" with below:

RAN tasks RAN1 to determine the bandwidth requirement by Q4 2022, to review in RAN#98 whether/how unlicensed spectrum can be considered in further work based on the bandwidth requirements determined by RAN1.

Moderator's proposal 2: Do not exclude FR2 from the SL positioning study (no change to SID required)

OPPO: We support the proposal.

16 – CATT

Response to Moderator's proposal 1: We are okay to defer the decision to the RAN#98, although our preference is to make the decision not to add unlicensed spectrum to the scope of the SI.

For Moderator's proposal 2: We are ok not to change the SID at this meeting. But we prefer not making the conclusion of "Do not exclude FR2 from the SL positioning study". We share the similar view as ZTE that the issue can be further discussed in the next RAN plenary.

17 – Samsung R&D Institute UK

For moderator proposal 1, we still prefer to exclude unlicensed spectrum in the study scope according to current SID. We can study/work on sidelink positioning for unlicensed spectrum after SL-U is first specified in Rel-18.

For moderator proposal 2, it is not necessary to have this proposal since no change to SID required and companies can provide evaluation results for FR2 (as optional) based on RAN1 agreements.

18 – Nokia Denmark

Nokia is fine with the moderators proposals.

19 – HUAWEI TECHNOLOGIES Co. Ltd.

We are fine with both proposals from moderator.

20 – Sony Europe B.V.

We are ok with the moderator proposals.

21 – Ericsson LM

For proposal 1, we would prefer a decision at this meeting, considering the size/timeline of the SI/WI. For the proponents of deferring the checkpoint, we would like to ask what is the way forward after RAN#98 if SL-U positioning should be studied. For how long would the SI need be extended? Is it realistic to only have one RAN1 meeting (RAN1#112 in February) to cover SL positioning in unlicensed when the SI is supposed to be closed by the March plenary?

We are ok with proposal 2

22 – CEWiT

okay with proposal 1 and 2

23 – China Unicom

We support the proposal 1. For proposal 2, we also prefer not making the conclusion of "Do not exclude FR2 from the SL positioning study", which can be postponed to the next RAN meeting for decision.

24 – Apple Benelux B.V.

Proposal 1: although our preference is not to add unlicensed to the SI, we are fine with postponing the decision to RAN #98-e based on the current NOTE i.e. bandwidth requirements should have been determined and a progress of the work in the SL WI should be substantial enough to enable us have a proper design foundation.

Proposal 2: Given the moderator's explanation, we are fine with the proposal.

2.4 Summary from Intermediate Round

Unlicensed spectrum:

The overwhelming majority of companies were ok with the moderator's proposal 1.

One company preferred to have a firm decision at this meeting, 3 companies didn't like the way forward because it wasn't clear how the study of SL positioning in unlicensed spectrum would proceed if RAN#98 were to agree to include it. One company preferred to remove the current note from the SID and instead capture something as an agreement from this RAN meeting.

Based on this feedback, it is proposed to agree moderator's proposal 1, and update the SID accordingly. It should noted that the current note in the SID says " it can be reviewed whether unlicensed spectrum can be considered in further work " and so by simply shifting the checkpoint date to RAN#98 makes no assumption about how any further work might be structured (e.g. by extending this SI, part of a WI, etc) - all such details would be up for discussion next time if there is an agreement to include unlicensed in scope.

- **Moderator's proposal 1**: Defer checkpoint on unlicensed spectrum to RAN#98 (to be reflected in minor update to SID)

FR2:

The overwhelming majority of companies were ok with the moderator's proposal 2.

2 companies had concern that this should not be seen as a final decision so it should be possible to discuss again at RAN#98 when discussion a potential WI scope. This seems to be a reasonable comment given that scope of any follow on WI will need to be discussed in the next meeting. Therefore the moderator's proposal is slightly adjusted to make clear that this is the conclusion from this meeting.

1 companies preferred not to capture any agreement from this meeting given that no SID change raised from the proposal. Hopefully the updated proposal that makes clear it is simply a conclusion from this meeting should also address this concern.

- **Moderator's proposal 2**: Do not exclude FR2 from the SL positioning study <u>at RAN#97</u> (no change to SID required)

2.5 Final Round

The moderators believes that the following proposals should now be agreeable as the conclusions from this discussion:

Moderator's proposal 1: Defer checkpoint on unlicensed spectrum to RAN#98 (to be reflected in minor update to SID)

Moderator's proposal 2: Do not exclude FR2 from the SL positioning study at RAN#97 (no change to SID required)

Companies are asked to provide feedback only if they cannot agree to one of these proposals. Note that detailed feedback to the proposed updated WID can be provided in section 3.5.

Feedback Form 3: Spectrum to be considered for sidelink positioning - Final Round

1 – LG Electronics UK

We are fine with checking the situation at RAN#98 with the understanding that WGs will not consider unlicensed spectrum when they try to complete the study according to the current plan. If this is not the common understanding, we think an explicit guidance is necessary, e.g., by adding "No WG work shall be done until an additional RAN decision at the check point." to the note. Our concern is there might be discussions in WGs on whether it is possible to add some evaluation results or conclusions regarding the unlicensed spectrum to the TR.

2 – NTT DOCOMO INC.

OK. We are also fine with LGE's suggestion.

3 – ZTE Corporation

We can accept the two proposals. However, we have the same view with LG, it should be common understanding that no dedicated evaluation/solution work for unlicensed spectrum is needed in the next two RAN1 meetings in positioning agenda. That is, no discussion of evaluation/solution related to channel access, control signaling design, etc. for SL unlicensed positioning.

4 – Beijing OPPO Com. corp.

Per proposal 1, the updated Note would be "Checkpoint at RAN#98 to see **if sufficient information** is available for this review." But the SI is supposed to be complete in RAN#98, the bandwidth requirements should be determined by RAN1 before that time, as "Evaluate bandwidth requirement needed to meet the identified accuracy requirements [RAN1]" is one of the SI objectives. And obviously, "sidelink communication in unlicensed spectrum has progressed" is redundant at this stage, RAN1 already had 2 meetings for it, and there will be 2 more meetings by RAN#98. Therefore, at RAN#98 there certainly will be sufficient information for the review, we suggest the following:

~~Note: When the bandwidth requirements have been determined and the study of sidelink communication in unlicensed spectrum has progressed, it can be reviewed~~ To review whether unlicensed spectrum can be

considered in further work~~. Checkpoint~~ at ~~RAN#97~~ RAN#98 ~~to see if sufficient information is available for this review~~.

We support proposal 2.

5 – HUAWEI TECHNOLOGIES Co. Ltd.

We support both proposals from the moderator.

6 – China Mobile E-Commerce Co.

We support proposal 2.

Regarding proposal 1, we can accept it for making progress by adding the note suggested by LGE.

7 – China Mobile E-Commerce Co.

We support proposal 2.

Regarding proposal 1, we can accept it for making progress by adding the note suggested by LGE.

8 – CATT

These two proposals are acceptable for us. And we also agree with LG and ZTE that there is no dedicated evaluation/solution work for unlicensed spectrum in the next two RAN1 meetings in positioning agenda.

9 – Intel Corporation (UK) Ltd

Moderator's comment

I'd like to make some comments before we reach the final deadline.

In response to LG's concern, also supported by other companies, it is certainly my understanding both from this discussion and from the SID wording that the WGs will not work on SL positioning in unlicensed spectrum until we have discussed again at RAN#98. To me this is clear from "...it can be reviewed whether unlicensed spectrum can be considered in further work. Checkpoint at RAN#98 to see if sufficient information is available for this review." - i.e. further work can only happen after the review, and the review can only happen is sufficient information is available at the review. However, to help ease the concerns. I think it would be accepted to add a sentence to proposal 1. "

Updatedmoderator's proposal 1: Defer checkpoint on unlicensed spectrum to RAN#98 (to be reflected in minor update to SID). No work on SL positioning in unlicensed spectrum is expected in the WGs prior to RAN#98.

In response to OPPO's suggestion to simplify the note significantly, the moderator agrees that the simplified note does capture the intention of what we will do. However, it does lose the fact that the bandwidth requirements are a key consideration for the discussion that will happen next time. At this stage of the discussion it seems preferable to make minimal changes to avoid triggering fresh discussion.

2.6 Summary from Final Round

Note that some responses from the moderator were provided in the feedback form.

Based on the feedback during the final round, the moderator considers that the following can be captured as the conclusions from this discussion:

- **Agreement 1**: Defer checkpoint on unlicensed spectrum to RAN#98 (to be reflected in minor update to SID). No work on SL positioning in unlicensed spectrum is expected in the WGs prior to RAN#98.
- **Agreement 2**: Do not exclude FR2 from the SL positioning study at RAN#97 (no change to SID required)

3 - Issue 2 - Revised SID

A revised SID has been provided by the rapporteur in the following tdoc:

- RP-222257 Revised SID on Study on expanded and improved NR positioning Intel Corporation SID

The tdoc was allocated to this email discussion but the only change is to change of rapporteur name which should not require discussion. However, the SID may require a revision to reflect to conclusion from Issue 1 later in the email discussion.

3.1 Initial Round

No feedback box is provided for the initial round. Feedback will be requested if we make progress on Issue 1 that requires a further update to the SID.

3.2 Summary from Initial Round

Not applicable

3.3 Intermediate Round

No feedback box is provided for the Intermediate round. Feedback will be requested if conclude Issue 1

3.4 Summary from Intermediate Round

Not applicable

3.5 Final Round

Based on the discussion of Issue 1 an updated SID is provided in the meeting Inbox/Drafts/[97e-12-R18-Positioning]/UpdatedSID. Companies are invited to provide any feedback to the updated SID.

Note that compared to the revised SID submitted in RP-222257, the updates are to capture the change of the checkpoint date and to add 2 more supporting companies.

Feedback Form 4: Feedback to updated SID

1 – LG Electronics UK We are fine with the draft update as far as our understanding in Section 2.5 is correct.
2 – NTT DOCOMO INC. OK
3 – HUAWEI TECHNOLOGIES Co. Ltd. Fine with the revised SID.
4 – HUAWEI TECHNOLOGIES Co. Ltd. Fine with the revised SID.
5 – MediaTek Inc. We are fine with the revised SID. Regarding the additional wording proposed by LG under question 2.5, we think this is probably not necessary. In general, we do not use the SID to specify what shall *not* be done, and we think the note will already be understood to mean that work on unlicensed takes place only after the checkpoint. So we prefer the moderator's current form.

3.6 Summary from Final Round

Based on the feedback during the final round the revised SID seems to be acceptable to all and can be approved. The final version will be made available as RP-222616.

4 Summary

Conclusions from this discussion:

- **Agreement 1**: Defer checkpoint on unlicensed spectrum to RAN#98 (to be reflected in minor update to SID). No work on SL positioning in unlicensed spectrum is expected in the WGs prior to RAN#98.
- **Agreement 2**: Do not exclude FR2 from the SL positioning study at RAN#97 (no change to SID required)
- **The revised SID in RP-222616 can be approved**

Following tdocs can all be noted:

- RP-222015 Discussion on the scope of Rel-18 sidelink positioning LG Electronics
- RP-222076 Views on SL positioning over unlicensed spectrum in R18 OPPO
- RP-222143 Views on sidelink positioning in unlicensed spectrum vivo
- RP-222259 Consideration of unlicensed spectrum for SL positioning in Rel-18? Intel Corporation
- RP-222429 Views on SL positioning spectrum requirements for V2X use case ROBERT BOSCH GmbH
- RP-222450 Discussion on the scope of Rel-18 NR SL positioning ZTE, Sanechips
- RP-222480 On Sidelink Positioning in Unlicensed Spectrum Apple Inc.