3GPP TSG-RAN WG2 Meeting #113-e R2-21xxxxx  
Online, Jan 25 – Feb 5, 2021

Source: Session Chair (MediaTek)  
Title: Report from session on positioning and sidelink relay

# Status of At-Meeting Email Discussions

This subclause is not an Agenda Item. It contains a running summary of the email discussions assigned to take place during the meeting weeks. This section will be moved to an appendix in the final version of the report.

* [AT113-e][600][POS][Relay] Organisational Nathan – Positioning/Relay (MediaTek)

Scope: Organisational discussions and announcements, as needed throughout the meeting weeks

Intended outcome: Well-informed participants

Deadline: Friday 2021-02-05 1000 UTC

* [AT113-e][601][POS] Integrity text proposal (Swift)

Scope: Continue discussion of the remaining open issues on integrity, taking into account contributions to agenda items 8.11.3.1 and 8.11.3.2, and develop an agreeable text proposal

Intended outcome: Updated TP, in R2-2102092

Deadline: Tuesday 2021-02-02 1200 UTC

* [AT113-e][602][POS] LTE Rel-15 positioning CRs (CATT)

Scope: Discuss and conclude on R2-2100391/R2-2100392/R2-2100393, R2-2100394/R2-2100395/R2-2100396, and R2-2101819/R2-2101818

Intended outcome: Agreed CRs (+summary in R2-2102303)

Deadline: Monday 2021-02-01 1200 UTC

* [AT113-e][603][POS] NR Rel-15 positioning CRs (Qualcomm)

Scope: Discuss and conclude on R2-2101380/R2-2101381, R2-2101465, R2-2101468, R2-2100397, R2-2100398/R2-2100399, R2-2100400/R2-2100401, R2-2101816/R2-2101817, R2-2101926/R2-2101927, and R2-2101928/R2-2101929

Intended outcome: Agreed CRs (+summary in R2-2102102)

Deadline: Monday 2021-02-01 1200 UTC

* [AT113-e][604][Relay] Issues from agenda item 8.7.4 (OPPO)

Scope: Discuss the proposals from R2-2102239, determine what needs to be resolved in the study item phase, and converge on the critical proposals

Intended outcome: Summary to be discussed in online session, in R2-2102093; summary of extension in R2-2102119

Deadline: Tuesday 2021-02-02 1200 UTC—extended to Thursday 2021-02-04 0200 UTC for discussion on P5; either we capture in the TR that simultaneous connections are left for normative phase, or we do not capture anything either way.

* [AT113-e][605][Relay] Continuation of L2 architecture issues (InterDigital)

Scope: Discuss the priority 2 proposals P6, P15-P19 from R2-2102091 and implement the agreements on the priority 1 proposals. Work towards conclusions if possible.

Intended outcome: Endorsable TP, in R2-2102098 (+summary in R2-2102110)

Deadline: Tuesday 2021-02-02 1200 UTC (for TP availability) —extended to 2021-02-04 0200 UTC to finalise TP in R2-2102116

* [AT113-e][606][Relay] Continuation of L3 architecture issues (Ericsson)

Scope: Discuss the “to be discussed” proposals P2/P3/P8/P9 from the L3 summary, and implement the agreements. Work towards conclusions if possible.

Intended outcome: Endorsable TP, in R2-2102097 (+summary in R2-2102101)

Deadline: Tuesday 2020-02-02 1200 UTC—extended to 2021-02-04 0200 UTC to finalise TP in R2-2102115

* [AT113-e][607][Relay] Continuation of discovery open issues (CATT)

Scope: Continue the discussion of R2-2102224.

Intended outcome: Updated summary, in R2-2102099 (+TP in R2-2102111)

Deadline: Tuesday 2021-02-02 1200 UTC

* [AT113-e][608][POS] Continue discussion of latency enhancements (CATT)

Scope: Discuss the proposals in R2-2100407 and R2-2101950 and converge to an agreeable TP. Additional latency enhancements from the previous email discussion can be captured if they have a clear consensus. Recommendations from RAN2 perspective should be clarified.

Intended outcome: Endorsable TP, in R2-2102305 (+summary in R2-2102304); summary of extension in R2-2102117

Deadline: Tuesday 2021-02-02 1200 UTC – extended to Thursday 2021-02-04 0200 UTC to discuss whether to send an LS to SA2 in relation to P4 of R2-2102304, and determine if one of the TPs in P4 is agreeable.

* [AT113-e][609][POS] Continued discussion of positioning in idle/inactive (Huawei)

Scope: Continue discussion of the issues from R2-2101230, and converge to an agreeable TP, taking as a baseline the principle that positioning in inactive is supported as recommended by RAN1. R2-2101229 to be taken into account.

Intended outcome: Endorsable TP, in R2-2102100; revised TP in R2-2102121

Deadline: Tuesday 2021-02-02 1200UTC – extended to 2021-02-04 0200 UTC to finalise the TP

* [AT113-e][610][POS] Continue discussion of on-demand PRS (Ericsson)

Scope: Continue the discussion of R2-2101389 and converge to an agreeable TP.

Intended outcome: Endorsable TP, in R2-2102096 (+summary in R2-2102369)

Deadline: Tuesday 2021-02-02 1200 UTC

* [AT113-e][611][POS] LS to RAN3 on E-CID LTE measurements in Rel-15 (Huawei)

Scope: Draft an LS to RAN3 asking for clarification of the intended support of LTE measurements sent from the gNB to LMF in Rel-15.

Intended outcome: Approvable LS in R2-2102104

Deadline: Thursday 2021-02-04 0200 UTC

* [AT113-e][612][POS] LPP proposals (Nokia)

Scope: Discuss P1-P7 of R2-2101889 and determine which CRs are agreeable.

Intended outcome: Summary in R2-2102105

Deadline: Thursday 2021-02-04 0200 UTC

* [AT113-e][613][POS] LS to RAN3 on activation time for periodic SRS (Huawei)

Scope: Revise R2-2101830 to reflect agreements from the discussion of P4 in R2-2102226.

Intended outcome: Approvable LS in R2-2102109

Deadline: Thursday 2021-02-04 0200 UTC

# 4 EUTRA corrections Rel-15 and earlier

See Appendix A for reference to Work items, work item codes and WIDs.

Only essential corrections. No documents should be submitted to 4. Please submit to 4.x

## 4.4 Positioning corrections Rel-15 and earlier

Documents in this agenda item will be handled by email. No web conference is planned for this agenda item.

* [AT113-e][602][POS] LTE Rel-15 positioning CRs (CATT)

Scope: Discuss and conclude on R2-2100391/R2-2100392/R2-2100393, R2-2100394/R2-2100395/R2-2100396, and R2-2101819/R2-2101818

Intended outcome: Agreed CRs (+summary in R2-2102303)

Deadline: Monday 2021-02-01 1200 UTC

[R2-2102303](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102303%20Report%20of%20%5bAT113-e%5d%5b602%5d%5bPOS%5d%20LTE%20Rel-15%20positioning%20CRs%20(CATT).docx) (Summary of [602]) CATT discussion Rel-15

* Noted without presentation

[R2-2100391](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\36305_CR0094_(Rel-14)_R2-2100391.docx) corrections on the descriptions of RequestLocationInformation message in TS36.305 CATT CR Rel-14 36.305 14.3.0 0094 - F UTRA\_LTE\_iPos\_enh2-Core

* Not pursued (conclusion of email discussion [602])

[R2-2100392](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\36305_CR0095_(Rel-15)-R2-2100392.docx) corrections on the descriptions of RequestLocationInformation message in TS36.305 CATT CR Rel-15 36.305 15.5.0 0095 - A UTRA\_LTE\_iPos\_enh2-Core

* Not pursued (conclusion of email discussion [602])

[R2-2100393](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\36305_CR0096_(Rel-16)-R2-2100393.docx) corrections on the descriptions of RequestLocationInformation message in TS36.305 CATT CR Rel-16 36.305 16.2.0 0096 - A UTRA\_LTE\_iPos\_enh2-Core

* Not pursued (conclusion of email discussion [602])

[R2-2100394](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\36305_CR0097_(Rel-14)-R2-2100394.docx) corrections on the indication for the not provided assistance data and location information in TS36.305 CATT CR Rel-14 36.305 14.3.0 0097 - F UTRA\_LTE\_iPos\_enh2-Core

* Not pursued (conclusion of email discussion [602])

[R2-2100395](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\36305_CR0098_(Rel-15)-R2-2100395.docx) corrections on the indication for the not provided assistance data and location information in TS36.305 CATT CR Rel-15 36.305 15.5.0 0098 - A UTRA\_LTE\_iPos\_enh2-Core

* Not pursued (conclusion of email discussion [602])

[R2-2100396](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\36305_CR0099_(Rel-15)-R2-2100396.docx) corrections on the indication for the not provided assistance data and location information in TS36.305 CATT CR Rel-16 36.305 16.2.0 0099 - A UTRA\_LTE\_iPos\_enh2-Core

* Not pursued (conclusion of email discussion [602])

[R2-2101818](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101818%20Correction%20to%20the%20basic%20production%20for%20positioning%20AD%20broadcast-R16.doc) Correction to the basic production for positioning AD broadcast-R16 Huawei, HiSilicon CR Rel-16 37.355 16.3.0 0289 - A LCS\_LTE\_acc\_enh-Core

* Not pursued (conclusion of email discussion [602])

[R2-2101819](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101819%20Correction%20to%20the%20basic%20production%20for%20positioning%20AD%20broadcast-R15.doc) Correction to the basic production for positioning AD broadcast-R15 Huawei, HiSilicon CR Rel-15 37.355 15.1.0 0290 - F LCS\_LTE\_acc\_enh-Core

* Not pursued (conclusion of email discussion [602])

# 5 Rel-15 WI: New Radio (NR) Access Technology

(NR\_newRAT-Core; leading WG: RAN1; REL-15; started: Mar. 17; closed: Jun. 19: WID: RP-191971)

Only essential corrections. Includes all R15 NR drops and architectures.

## 5.5 Positioning corrections

Corrections to both the stage 2 and stage 3 aspects related to positioning. Stage 2 CRs should be discussed with the specification rapporteur before submission.

Documents in this agenda item will be handled in a break out session.

* [AT113-e][603][POS] NR Rel-15 positioning CRs (Qualcomm)

Scope: Discuss and conclude on R2-2101380/R2-2101381, R2-2101465, R2-2101468, R2-2100397, R2-2100398/R2-2100399, R2-2100400/R2-2100401, R2-2101816/R2-2101817, R2-2101926/R2-2101927, and R2-2101928/R2-2101929

Intended outcome: Agreed CRs (+summary in R2-2102102)

Deadline: Monday 2021-02-01 1200 UTC

[R2-2102102](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102102_(%5bAT113-e%5d%5b603%5d%5bPOS%5d%20NR%20Rel-15%20positioning%20CRs)_Summary_v1.docx) (Summary of [603]) Qualcomm Incorporated discussion Rel-15

CRs proposed for agreement:

Proposal 4: Agree the CRs in R2-2101465/R2-2101468 ("Support OTDOA assistance data for case of NR serving cell").

CRs requiring more discussion:

Proposal 5: Discuss R2-2101816/R2-2101817 ("Correction to E-CID") further during on-line session to determine a way forward.

Proposal 7: Discuss R2-2101928/R2-2101929 ("Correction to 5G support for NB-IOT positioning") further during on-line session to determine a way forward.

CRs proposed not to be pursued:

Proposal 1: The CR in R2-2100397 ("Remove the NOTE in architecture figure in TS38.305") is not pursued.

Proposal 2: The CRs in R2-2100398/R2-2100399 ("Corrections on the indication for the not provided assistance data and location information in TS38.305") are not pursued.

Proposal 3: The CRs in R2-2100400/R2-2100401 ("Corrections on the descriptions of RequestLocationInformation message in TS38.305") are not pursued.

Proposal 6: The CRs in R2-2101926/R2-2101927 ("Correction on the description for UE capability transfer") are not pursued.

Proposal 8: The CRs in R2-2101380/R2-2101381 ("Correction of A-GNSS Assistance Data RTK Observation") are not pursued.

Discussion:

(Only P5/P7; the other proposals are confirmed in the email discussion)

P5:

Qualcomm understand this is to align stage 2 with stage 3 and the Huawei CRs are correct in this respect. They think in Rel-15, if NRPPa terminates at the gNB, inter-RAT LTE measurements cannot be reported, and all inter-RAT measurements have been moved by RAN3 to NR E-CID.

Nokia see in NRPPa that the measurement quantities can be set to RSRP and RSRQ, and the MEASUREMENT INITIATION REQUEST can be sent to NG-RAN, i.e. to gNB also. So they understand that from the signalling point of view, the LMF can send a request for RSRP/RSRQ to gNB, and this seems to be the same for Rel-15 and Rel-16. They would be OK to have RAN3 sort the issue out.

Ericsson agree with Nokia that there may be no harm in keeping the current spec; they also understand that the gNB can provide LTE inter-RAT measurements.

Huawei would like to resolve this in RAN2 and think Nokia are mistaken, because the LMF specification in CT4 indicates that the LMF can identify if the PCell is ng-eNB or gNB. In their understanding there is no use case for the LMF to request an LTE measurement from the gNB, because it cannot be reported. In Rel-15, they have the same understanding as Qualcomm that the gNB can only report the cell ID and cell portion ID in Rel-15, and this is in line with the RAN3 spec.

Nokia understand that the NRPPa signalling allows the transfer of LTE measurements and RAN3 would need to confirm if this is the intention.

Intel think in Rel-16, RAN3 already changed the specification to support LTE measurements to LMF, and this was not done for Rel-15; since it’s a network specification, this would normally be changed only in the most recent version. They would like to check with RAN3.

Huawei want to emphasise that in the Rel-15 spec, for the other RAT measurements, there are no LTE measurements, and the intention of this CR is to align with the stage 3. They are OK to confirm with RAN3.

* [AT113-e][611][POS] LS to RAN3 on E-CID LTE measurements in Rel-15 (Huawei)

Scope: Draft an LS to RAN3 asking for clarification of the intended support of LTE measurements sent from the gNB to LMF in Rel-15.

Intended outcome: Approvable LS in R2-2102104

Deadline: Thursday 2021-02-04 0200 UTC

P7:

Qualcomm understand that Rel-15 only supports regulatory use cases, which is why there were only LTE positioning methods, and we never had an agreement to support NB-IoT positioning methods. They would prefer to capture it in the Rel-16 spec only.

Huawei agree with Qualcomm and think SA2 has agreed in Rel-16 to support positioning reporting with NB-IoT EDT. They also think regulatory cases do not include NB-IoT. They would like to take the Rel-16 CR now and check the Rel-15 support after the meeting.

Nokia agree with Qualcomm about Rel-15: NB-IoT is not in the scope of the regulatory use cases. For Rel-16 they have no strong view, but think in LTE the NB-IoT positioning support was introduced by the NB-IoT session, and so this may not be in our scope for Rel-16. They would like more time to check.

Can come back to the Rel-16 CR in the CB session; Rel-15 CR is not pursued.

[R2-2102104](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102104%20LS%20on%20E-CID%20LTE%20measurements.docx) (Draft LS from [611]) Huawei, HiSilicon LS out Rel-16 NR\_pos-Core To:RAN3

* Approved as R2-2102128

Stage 3

[R2-2101379](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101379%20Discussion%20GNSS%20AD%20resolution%20indication.docx) GNSS RTK observations resolution indication Ericsson discussion Rel-15

[R2-2101380](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101380%20GNSS%20AD%20CR.docx) Correction of A-GNSS Assistance Data RTK Observation Ericsson CR Rel-15 37.355 15.1.0 0285 - F NR\_newRAT-Core

* Not pursued (outcome of email discussion [603])

[R2-2101381](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101381%20GNSS%20AD%20resolution%20CR%20A.docx) Correction of A-GNSS Assistance Data RTK Observation Ericsson CR Rel-16 37.355 16.3.0 0286 - A NR\_newRAT-Core

* Not pursued (outcome of email discussion [603])

Stage 2 cleared with rapporteur

[R2-2101465](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101465_(38305%20SFN%20Init%20OTDOA%20R15).docx) Support OTDOA assistance data for case of NR serving cell Qualcomm Incorporated, Ericsson CR Rel-15 38.305 15.7.0 0061 - F NR\_newRAT-Core

* Agreed (outcome of email discussion [603])

[R2-2101468](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101468_(38305%20SFN%20Init%20OTDOA%20R16).docx) Support OTDOA assistance data for case of NR serving cell Qualcomm Incorporated, Ericsson CR Rel-16 38.305 16.3.0 0062 - F NR\_newRAT-Core

* Agreed (outcome of email discussion [603])

Stage 2 not cleared with rapporteur

[R2-2100397](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\38305_CR0054_(Rel-15)_R2-2100397.docx) Remove the NOTE in architecture figure in TS38.305 CATT CR Rel-15 38.305 15.7.0 0054 - F NR\_newRAT-Core

* Not pursued (outcome of email discussion [603])

[R2-2100398](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\38305_CR0055_(Rel-15)_R2-2100398.docx) corrections on the indication for the not provided assistance data and location information in TS38.305 CATT CR Rel-15 38.305 15.7.0 0055 - F NR\_newRAT-Core

* Not pursued (outcome of email discussion [603])

[R2-2100399](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\38305_CR0056_(Rel-16)_R2-2100399.docx) corrections on the indication for the not provided assistance data and location information in TS38.305 CATT CR Rel-16 38.305 16.3.0 0056 - A NR\_newRAT-Core

* Not pursued (outcome of email discussion [603])

[R2-2100400](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\38305_CR0057_(Rel-15)_R2-2100400.docx) corrections on the descriptions of RequestLocationInformation message in TS38.305 CATT CR Rel-15 38.305 15.7.0 0057 - F NR\_newRAT-Core

* Not pursued (outcome of email discussion [603])

[R2-2100401](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\38305_CR0058_(Rel-16)_R2-2100401.docx) corrections on the descriptions of RequestLocationInformation message in TS38.305 CATT CR Rel-16 38.305 16.3.0 0058 - A NR\_newRAT-Core

* Not pursued (outcome of email discussion [603])

[R2-2101815](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101815%20Clarification%20on%20E-CID%20and%20NR%20E-CID.docx) Clarification on E-CID and NR E-CID Huawei, HiSilicon discussion Rel-15 NR\_newRAT-Core

[R2-2101816](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101816%20Correction%20to%20E-CID-R15.doc) Correction to E-CID-R15 Huawei, HiSilicon CR Rel-15 38.305 15.7.0 0063 - F NR\_newRAT-Core

[R2-2101817](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101817%20Correction%20to%20E-CID-R16.doc) Correction to E-CID-R16 Huawei, HiSilicon CR Rel-16 38.305 16.3.0 0064 - A NR\_newRAT-Core

[R2-2101926](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101926%20Correction%20on%20the%20descritpion%20for%20UE%20capability%20transfer-R15.doc) Correction on the descritpion for UE capability transfer-R15 Huawei, HiSilicon CR Rel-15 38.305 15.7.0 0066 - F NR\_newRAT-Core

* Not pursued (outcome of email discussion [603])

[R2-2101927](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101927%20Correction%20on%20the%20descritpion%20for%20UE%20capability%20transfer-R16.doc) Correction on the descritpion for UE capability transfer-R16 Huawei, HiSilicon CR Rel-16 38.305 16.3.0 0067 - A NR\_newRAT-Core

* Not pursued (outcome of email discussion [603])

[R2-2101928](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101928%20Correction%20to%205G%20support%20for%20NB-IOT%20positioning-R15.doc) Correction to 5G support for NB-IOT positioning-R15 Huawei, HiSilicon CR Rel-15 38.305 15.7.0 0068 - F NR\_newRAT-Core

* Not pursued

[R2-2101929](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101929%20Correction%20to%205G%20support%20for%20NB-IOT%20positioning-R16.doc) Correction to 5G support for NB-IOT positioning-R16 Huawei, HiSilicon CR Rel-16 38.305 16.3.0 0069 - A NR\_newRAT-Core

Nokia understand this is OK from the NB-IoT perspective, but note it is not strictly an NR issue since it relates to NB-IoT access.

Huawei think Nokia’s comment is correct, and this should only be applicable for NB-IoT UEs accessing ng-eNB. The figure can be revised to change from NG-RAN to ng-eNB. The coversheet also needs to be changed (to cat F).

CR to be revised as described above.

Qualcomm think the original CR had text in a wrong section. Huawei clarify this was done to follow the LTE stage 2 spec, but on review agree that Qualcomm’s suggestion is right.

* Postponed

# 6 Rel-16 NR Work Items

Essential corrections. While high maintenance intensity is expected, Rel-16 corrections are treated separately per WI.

Tdoc Limitation: 40 tdocs in total for all sub agenda items, or the restriction for each sub-AI, whichever is more restrictive.

## 6.6 NR Positioning Support

(NR\_pos-Core; leading WG: RAN1; REL-16; started: Mar 19; target; Jun 20; WID: RP-200218).

(NR TEI16 Positioning)

Documents in this agenda item will be handled in a break out session

Tdoc Limitation: 9 tdocs, See also tdoc limitation for Agenda Item 6

### 6.6.1 General and Stage 2 corrections

Including incoming LSs, Including impact to 36.305 and 38.305. Stage 2 corrections shall be discussed with the specification rapporteur (Sven Fischer sfischer@qti.qualcomm.com) before submission.

This agenda item will use a summary document (Ericsson).

Incoming LS (and draft reply)

[R2-2100044](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100044_R3-207220.docx) LS on Rel-16 NR Positioning Correction (R3-207220; contact: Huawei) RAN3 LS in Rel-16 NR\_pos-Core To:RAN2, RAN1

Nokia note there is a reply from RAN1 in R2-2102327.

* Noted (can reply from the discussion of R2-2102226)

[R2-2101830](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101830%20%5bDraft%5d%20Reply%20LS%20on%20Rel-16%20NR%20Positioning%20Correction.docx) [Draft] Reply LS on Rel-16 NR Positioning Correction Huawei, HiSilicon LS out Rel-16 NR\_pos-Core To:RAN3 Cc:RAN1

To be revised to reflect the agreements under P4 of R2-2102226

* Revised in R2-2102109
* [AT113-e][613][POS] LS to RAN3 on activation time for periodic SRS (Huawei)

Scope: Revise R2-2101830 to reflect agreements from the discussion of P4 in R2-2102226.

Intended outcome: Approvable LS in R2-2102109

Deadline: Thursday 2021-02-04 0200 UTC

[R2-2102109](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102109%20LS%20to%20RAN3%20on%20activation%20time%20for%20periodic%20SRS.docx) [Draft] Reply LS on Rel-16 NR Positioning Correction Huawei, HiSilicon LS out Rel-16 NR\_pos-Core To:RAN3 Cc:RAN1

Nokia think the title could be more specific.

* Approved as R2-2102126

[R2-2102327](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102327_R1-2101918.docx) Reply LS on Rel-16 NR Positioning Correction (R3-207220; contact: Huawei) RAN1 LS in Rel-16 NR\_pos-Core To:RAN3 Cc:RAN2

Nokia assume this resolves Q2 from the RAN3 LS and we can focus on Q1.

* Noted

Summary document

[R2-2102226](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102226%20Summary%20.docx) Summary for stage2 corrections for NR Positioning Ericsson discussion Rel-16 NR\_SON\_MDT-Core

Proposal 1 RAN2 to agree the CR in R2-2100402.

Proposal 2 RAN2 to agree the CR in R2-2101829.

Proposal 3 RAN2 to discuss the need to resolve the PFL ambiguity during measurement gap request procedure and accordingly agree the CR in R2-2101385.

Proposal 4 RAN2 to decide on the reply either a) RAN2 see no problem for RAN3 to add this functionality. b) RAN2 recommendation is to not add this functionality and let first UL SRS go in vain as for periodic RAN2 view is that it is not critical.

Discussion:

P1:

Qualcomm think this is not needed any more after the agreed CRs in the Rel-15 agenda item. The remaining change is just to add the abbreviation for semi-persistent and this may not justify a separate CR.

CATT agree that this is no longer needed.

Nokia would prefer to capture only the abbreviations that we use in the spec, and think some terms like “semi-persistent” and “positioning frequency layer” should be spelled out instead.

CR is noted and the change for defining SP can be combined with another CR.

P2:

vivo wonder if this change should be in section 8.2 rather than 5.3 since it is method-specific. Qualcomm think it was done this way in 36.305 and skipped in the Rel-15 version of 38.305 because we did not have UL-TDOA; they think now we should capture it in the same section. Huawei agree with Qualcomm.

Nokia understand the text is from a signalling perspective, and wonder if we should mention that the gNB configures the UE with the SRS configuration. Huawei think this would be OK but does not match what we have in LTE.

P3:

Qualcomm are not sure if the sentence on triggering a release of the configuration helps with understanding, and think at least some polishing is required. They think to explain it properly a new figure may be needed. They agree there is no use case for the sequence of PFL information since the UE can only process one layer at a time.

Chair wonders if we need a requirement on the UE.

Huawei agree with Qualcomm and wonder if any standard impact is needed since this is internal UE behaviour.

Intel understand in LTE when upper layers trigger lower layers to do the measurement, lower layers will indicate the measurement gap request if needed, and normally the network should configure a measurement gap pattern that would cover the PRS measurement of all related frequency layers. So they understand that the UE actually is not allowed to send the request multiple times in the same positioning session.

CATT think the PFL outside the UE’s active BW is one of the reasons for the UE to trigger the location measurement indication procedure, but we need to clarify this before taking the CR.

To the chair’s question, Ericsson think it is specified in LPP that the UE is only allowed to measure one frequency layer at a time.

Nokia wonder if RAN4 have any assumptions on how this is handled. Companies may need to check with RAN4 colleagues if there is an issue here.

Issue is postponed to next meeting.

P4:

Ericsson think this could be needed for a UE that does not support semi-persistent or aperiodic SRS.

Nokia do not see a reason for the first transmission of periodic SRS to be critical to receive, since the neighbour gNBs can measure the following instance(s).

Qualcomm think it could be useful but is more suitable for Rel-17, and note that we do not have it for UTDOA in LTE. In their view this is not a correction.

CATT think we have discussed this previously and felt it was not needed in Rel-16. From their point of view it could be discussed in Rel-17.

Huawei have the same view as Qualcomm.

Agreements:

RAN2 consider activation time for periodic SRS as an enhancement and will not introduce it in Rel-16.

Reply to RAN3 should indicate this.

The following documents will not be treated individually

[R2-2100402](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\38305_CR0059_(Rel-16)_R2-2100402.docx) Miscellaneous corrections in TS38.305 CATT CR Rel-16 38.305 16.3.0 0059 - F NR\_pos-Core

* Merged with R2-2101829

[R2-2101383](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101383%20UL%20SRS%20Periodic%20Activation%20Time.docx) Activation Time for Periodic UL SRS Transmission Ericsson discussion Rel-16

[R2-2101385](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101385%20UE%20handling%20of%20PFL.docx) UE handling of Positioning Frequency Layer Ericsson CR Rel-16 38.305 16.3.0 0060 - F NR\_pos-Core

[R2-2101829](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101829%20Correction%20on%20the%20description%20for%20gNB%20measurements.doc) Correction on the description for gNB measurements Huawei, HiSilicon, Qualcomm Incorporated CR Rel-16 38.305 16.3.0 0065 - F NR\_pos-Core

Revised to incorporate the abbreviation for semi-persistent from R2-2100402.

* Revised in R2-2102106

[R2-2102106](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102106%20%20Correction%20on%20the%20description%20for%20gNB%20measurements.doc) Correction on the description for gNB measurements Huawei, HiSilicon, Qualcomm Incorporated CR Rel-16 38.305 16.3.0 0065 1 F NR\_pos-Core

* Agreed

### 6.6.2 RRC corrections

Including impact to 36.331, 38.331, and 38.306.

This agenda item will use a summary document (Huawei).

Summary document

[R2-2101832](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101832%20Summary%20for%20POS%20RRC%20AI%206.6.2.docx) Summary for POS RRC AI 6.6.2 Huawei, HiSilicon discussion Rel-16 NR\_pos-Core Late

Proposal1: If the UE has a stored valid version of a required posSIB, UE uses that version. If the UE does not have stored valid version of one or more required posSIB(s), it acquires SI message(s) corresponding to those SIB(s). [R2-2100151]

Proposal2: Updated the text in section 5.2.2.4.2 to reflect that the required posSIBs are requested by upper layers. [R2-2100151]

Proposal3: Update the condition of checking posSIB validity. The UE considers the stored posSIB is valid either the expiration timer has not expired or the value tag is identical.[R2-2100403][R2-2101386]

Proposal4: For offsetToSI-Used, add “+8” for SI window position calculation equation in 5.2.2.3.2. [R2-2101899]

Proposal5: For posSi-Periodicity, add the restriction on posSi-Periodicity Field description.[R2-2101899]

Discussion:

P1/P2:

Huawei clarify that the intention of section 5.2.2.4.2 is to allow the UE to acquire the posSIB when indicated by upper layers, so some changes to the CR are needed.

vivo wonder what happens if the posSIB has changed without a value tag change for a posSIB that is not broadcasted. The UE needs to receive the posSIB to check the value tag.

CATT agree with P1; for P2, they think it should be clear that the UE does not acquire the posSIB if upper layers did not request it. They see some interaction with discussion [016] from P2.

Samsung think discussion [016] moved the upper layer condition to section 5.2.2.1, so it is no longer needed in 5.2.2.4.2.

P3:

Nokia wonder if it is a valid use case to have both valueTag and expirationTime for the same posSIB. Chair understands the spec does not forbid it. They are OK with the actual CR.

Huawei think the value tag in the current spec is useless, because it is outside the scheduling information.

P4/P5:

CATT think the content is OK but the coversheet is wrong (mentions NR-U).

The following documents will not be treated individually

[R2-2100151](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100151_CR2034r1_38331_Rel16_Corrections%20to%20acquisition%20of%20positioning%20SIBs.docx) Corrections to acquisition of positioning SIBs Samsung Electronics Co., Ltd, Ericsson CR Rel-16 38.331 16.3.1 2034 1 F NR\_pos-Core R2-2009102

To be revised to align with discussion [016].

* Revised in R2-2102107

[R2-2102107](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102107_CR2034r2_38331_Rel16_Corrections%20to%20acquisition%20of%20positioning%20SIBs.docx) Corrections to acquisition of positioning SIBs Samsung Electronics Co., Ltd, Ericsson CR Rel-16 38.331 16.3.1 2034 2 F NR\_pos-Core R2-2009102

Samsung indicate an offline comment was received about two places where the term “posSIB” was missed, and a revision is needed. (First paragraph of 5.2.2.3.5 and second level 1 paragraph of 5.2.2.3.5.)

“or posSIB(s)” to be added in these two places.

* Agreed with this change as R2-2102127

[R2-2100403](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\38331_CR2322_(Rel-16)_R2-2100403.docx) Corrections on posSIB validity CATT,Ericsson, Intel Corporation, MediaTek Inc CR Rel-16 38.331 16.3.0 2322 - F NR\_pos-Core

* Agreed

[R2-2101386](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101386%20Usage%20of.docx) Usage of ExpirationTime and ValueTag Ericsson discussion Rel-16

[R2-2101899](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101899%20(6.6.2)%20Correction%20on%20SI%20window%20calculation%20for%20PosSIB.docx) Correction on SI window calculation for PosSIB Samsung R&D Institute UK CR Rel-16 38.331 16.3.1 2449 - F NR\_pos-Core

Coversheet needs to be updated to remove the references to NR-U.

* Revised in R2-2102108

[R2-2102108](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102108%20(6.6.2)%20Correction%20on%20SI%20window%20calculation%20for%20PosSIB_corrected.docx) Correction on SI window calculation for PosSIB Samsung R&D Institute UK CR Rel-16 38.331 16.3.1 2449 1 F NR\_pos-Core

Samsung indicate there are coversheet changes only.

* Agreed

Withdrawn/Not available

R2-2100404 Correction on Positioning SRS Resource CATT CR Rel-16 38.331 16.3.0 2323 - F NR\_pos-Core Withdrawn

### 6.6.3 LPP corrections

This agenda item will use a summary document (Nokia).

Summary document

[R2-2101889](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101889%20Summary_of_6_6_3_LPP_corrections_v3.docx) Summary of agenda item 6.6.3 - LPP Corrections Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_pos-Core Late

Proposal 1: RAN2 to discuss if it is agreeable to delete the codepoint value ‘ul-srs’ from nr-AdType field in NR-Multi-RTT-RequestAssistanceData IE and add the field description for nr-AdType provided in the CR. [R2-2100405]

Proposal 2: RAN2 to discuss if it is OK to add a proper field description for commonIEsProvideAssistanceData IE instead of deleting the current field description and if this course is pursued, to have an offline email discussion to come up with an agreeable text proposal. RAN2 to also discuss whether any change agreed to this IE should be made also for Rel-14 and Rel-15. [R2-2100406]

Proposal 3: RAN2 to discuss if it is OK to add a new field trackingAreaCode to CommonIEsRequestAssistanceData IE and as part of UpdateCapabilities field in PeriodicAssistanceDataControlParameters IE. [R2-2101382]

Proposal 4: RAN2 to discuss if it is useful to add a clarification about the LPP layer to RRC layer interaction when measurement gap is required for NR DL PRS measurements. If so, have an offline email discussion to come up with a suitable text proposal for the clarification. [R2-2101384]

Proposal 5: RAN2 to agree adding Need ON need code for the following fields: nr-DL-PRS-ResourceID-List, associated-DL-PRS-ID, dl-PRS-BeamInfoSet (under TRP-LocationInformation and BeamInfo) and dl-PRS-QCL-Info and to check whether need codes for other optional fields and conditional fields needs similar updates. [R2-2101827]

Proposal 6: RAN2 to discuss each change one by one and decide on the way forward. An offline email discussion seems more suitable to go over the proposed changed and to discuss the reasons for change.

Proposal 7: RAN2 to discuss how to handle the Need code for fields that appear in both uplink and downlink messages and whether it is OK to replace the conditional presence tags for fields used in uplink messages with field description explained the conditions under which the field is present. Please also discuss if any changes agreed can be applied for LTE also as these Need code and conditional presence tags issue have been there since Rel-9 in LTE.

* [AT113-e][612][POS] LPP proposals (Nokia)

Scope: Discuss P1-P7 of R2-2101889 and determine which CRs are agreeable.

Intended outcome: Summary in R2-2102105

Deadline: Thursday 2021-02-04 0200 UTC

[R2-2102105](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102105%20Summary%20of%20LPP%20Proposals_v2.docx) (Summary of [612]) Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_pos-Core

Proposal 1: CR in R2-2100405 is not agreed, especially given that there is a difference in view about the usage of ul-srs codepoint. Proponent may discuss offline with other companies to see if there is interest to come back to this issue in the next meeting.

Proposal 2: CR in R2-2100406 is agreed for Rel-16 with updates to CR cover sheet. CR cover updates should add the magic sentence to make the change applicable for earlier releases and must fix the work item code.

Proposal 3: CR in R2-2101384 is not agreed as is. Proponent may discuss offline with other companies to see if there is interest to agree on a modified text proposal.

Proposal 4: The changes in CR in R2-2101827 is agreed but it should be implemented using the latest baseline specification and updates to CR cover sheet are required. CR cover updates must fix the affected clauses, CR revision, work item code.

Proposal 5: Proposals in R2-2101828 are not agreed. Proponent may discuss offline with other companies to see if there is interest to come back to this issue in the next meeting with a CR.

Proposal 6: Proposals in R2-2101858 are not agreed. Proponent may discuss offline with other companies to see if there is interest to come back to this issue in the next meeting with a CR.

Proposal 7: CR in R2-2101382 is not agreed.

P2 and P4 are treated under the corresponding tdocs.

The following documents will not be treated individually

[R2-2100405](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\37355_CR0283_(Rel-16)_R2-2100405.docx) Correction on NR-Multi-RTT-RequestAssistanceData CATT CR Rel-16 37.355 16.3.0 0283 - F NR\_pos-Core

[R2-2100406](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\37355_CR0284_(Rel-16)_R2-2100406.docx) Corrections on the field description of commonIEsProvideAssistanceData in TS37.355 CATT CR Rel-16 37.355 16.3.0 0284 - F NR\_pos-Core

Based on offline discussion, the CR can have the magic sentence.

* Revised in R2-2102434

R2-2102434 Corrections on the field description of commonIEsProvideAssistanceData in TS37.355 CATT CR Rel-16 37.355 16.3.0 0284 1 F NR\_pos-Core

Lenovo think the change is OK in principle, but the magic sentence should refer back to Rel-14—however, in Rel-14 the spec number is different. CATT indicate this was discussed and they think 36.355 should have a separate CR against Rel-14.

Lenovo think there is not a strong reason to change 36.355 separately; the change is correct but not critical.

Huawei point out there is no reference from 36.355 to 37.355 in Rel-14, so they think we should have a separate CR.

* Agreed

[R2-2101382](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101382%20Tracking%20Area%20Code.docx) Correction of A-GNSS Periodical retrival of Assistance Data Ericsson CR Rel-16 37.355 16.3.0 0287 - F NR\_pos-Core

[R2-2101384](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101384%20%20PFL%20Measurement%20Gap.docx) LPP Layer interaction with lower layers for Positioning Frequency layer and Measurement Gap Ericsson CR Rel-16 37.355 16.3.0 0288 - F NR\_pos-Core

* Revised in R2-2102123

R2-2102123 LPP Layer interaction with lower layers for Positioning Frequency layer and Measurement Gap Ericsson CR Rel-16 37.355 16.3.0 0288 1 F NR\_pos-Core

Nokia think more time may be needed.

* Postponed

[R2-2101827](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101827%20Correction%20to%20the%20need%20code%20for%20downlink%20LPP%20message.doc) Correction to the need code for downlink LPP message Huawei, HiSilicon CR Rel-16 37.355 16.3.0 0292 - F NR\_pos-Core

Lenovo think there are other places where the need codes should be added, including for legacy fields. The latter may need a separate discussion. Nokia agree that the extra fields need to be checked carefully.

* Postponed

[R2-2101828](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101828%20Discussions%20on%20PRS%20configurations.DOC) Discussions on PRS configurations Huawei, HiSilicon CR Rel-16 37.355 16.3.0 0293 - F NR\_pos-Core

* Withdrawn

[R2-2102228](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102228%20Discussions%20on%20PRS%20configurations.DOC) Discussions on PRS configurations Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

* Revised in R2-2102423

[R2-2102423](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102423%20Discussions%20on%20PRS%20configurations.DOC) Discussions on PRS configurations Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

[R2-2101858](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101858%20Disucussion%20on%20the%20need%20for%20fields%20in%20the%20uplink%20LPP%20message.docx) Disucussion on the need for fields in the uplink LPP message Huawei, HiSilicon discussion Rel-16

Withdrawn/Not available

R2-2101826 Disucussion on the need for fields in the uplink LPP message Huawei, HiSilicon CR Rel-16 37.355 16.3.0 0291 - F NR\_pos-Core Withdrawn

### 6.6.4 MAC corrections

# 7 Rel-16 EUTRA Work Items

Essential corrections

## 7.6 LTE Positioning

(NavIC, LTE TEI16 Positioning)

Documents in this agenda item will be handled by email. No web conference is planned for this agenda item.

# 8 Rel-17 NR Work Items

## 8.7 NR Sidelink relay SI

(FS\_NR\_SL\_relay; leading WG: RAN2; REL-17; WID: RP-202208)

Time budget: 1.5 TU

Tdoc Limitation: 4 tdocs

Email max expectation: 4 threads

### 8.7.1 Organizational

TR updates, rapporteur inputs, other organizational documents. Documents in this AI do not count towards the tdoc limitation.

Work plan

[R2-2100112](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100112%20-%20Work%20planning%20of%20R17%20SL%20relay.doc) Work planning of R17 SL relay OPPO Work Plan Rel-17 FS\_NR\_SL\_relay

* Noted

Incoming LS (and draft reply)

[R2-2100070](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100070_S2-2009229.docx) Reply LS to Reply LS on Direct Discovery and Relay (S2-2009229; contact: OPPO) SA2 LS in Rel-17 FS\_5G\_ProSe To:RAN2

OPPO think the details of the first point are mainly a terminology issue and we don’t need to reply.

CATT agree that we can note the LS and discuss any issues under discovery.

vivo think if SA2 need anything they can ask us.

* Noted

[R2-2100201](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100201%20%5bDraft%5d%20LS%20on%20Direct%20Discovery%20and%20Relay.docx) [Draft] LS on Direct Discovery and Relay CATT LS out Rel-17 FS\_NR\_SL\_relay To:SA2

* Withdrawn

TR

[R2-2100113](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Docs\R2-2100113.zip) TR 38.836 V1.0.1 OPPO draft TR Rel-17 38.836 1.0.1 FS\_NR\_SL\_relay

* Endorsed (baseline for decisions of this meeting)

[R2-2100170](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100170%20Removal%20of%20comparison%20section%20from%20TR38.836%20for%20SL%20Relay%20v4.docx) Removal of comparison section from TR38.836 for SL Relay MediaTek Inc., OPPO, Interdigital discussion Rel-17 FS\_NR\_SL\_relay

Proposal 1: Remove the whole section of Section 6 Comparison (including both 6.1 Comparison of UE-to-Network Relay and 6.2 Comparison of UE-to-UE Relay) from TR38.836.

Proposal 2: Capture the evaluation/analysis of the layer-2 based and layer-3 based relay architecture in the conclusion section (i.e. section 7) respectively (as shown in the TP at Annex).

Discussion:

Huawei agree with the two proposals and think the important task is to summarise and analyse the solutions individually.

ZTE and Lenovo have the same view as Huawei.

Intel can accept the majority view but think we have to consider the ultimate feasibility decision; it may make sense to have the comparison if we consider both L2 and L3 as feasible.

Samsung have the same view as Intel and think some template will be needed for understanding the impact. They wonder also what the motivation for removing the comparison is other than convenience. MediaTek clarify that SA2 did not do a comparison.

Nokia are OK with removing the comparison but want to clarify that we are not concluding right now that anything should go to normative work. Chair has the same understanding.

Ericsson think with a standalone analysis of the two solutions, it would be good to have some information on the commonalities and differences.

CATT support the proposals.

Futurewei think these proposals will not change the feasibility decision from last meeting; the question is just whether we recommend one or both architectures for normative work.

Qualcomm are OK with the proposals and think the comparison will take a long time.

Ericsson want to capture that the conclusions shall align with the objectives of the SID

Agreements:

Remove the whole section of Section 6 Comparison (including both 6.1 Comparison of UE-to-Network Relay and 6.2 Comparison of UE-to-UE Relay) from TR38.836.

Capture the evaluation/analysis of the layer-2 based and layer-3 based relay architecture in the conclusion section (i.e. section 7) respectively, taking the SID objectives into account as usual.

[R2-2101489](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101489%20L23%20comparison.docx) Comparison of L2 and L3 Relay Architectures Futurewei, Huawei, HiSilicon, MediaTek, Apple, Interdigital, Convida Wireless discussion Rel-17 FS\_NR\_SL\_relay

### 8.7.2 Relaying Mechanisms and their characteristics

No documents should be submitted to 8.7.2. Please submit to 8.7.2.x.

#### 8.7.2.1 Layer 2 relay

Open issues and feasibility for layer 2 relay design.

This agenda item will use a summary document (InterDigital).

Summary document

[R2-2102223](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102223%20-%20Summary%20document%20for%20AI%208.7.2.1_v2.docx) Summary document for AI 8.7.2.1 InterDigital discussion Rel-17 FS\_NR\_SL\_relay

* Revised in R2-2102237

[R2-2102237](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102237%20-%20Summary%20document%20for%20AI%208.7.2.1_v5.docx) Summary document for AI 8.7.2.1 InterDigital discussion Rel-17 FS\_NR\_SL\_relay

* Revised in R2-2102091

[R2-2102091](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102091%20-%20Summary%20document%20for%20AI%208.7.2.1_v6.docx) Summary document for AI 8.7.2.1 InterDigital discussion Rel-17 FS\_NR\_SL\_relay

Proposal 1 Treat the proposals in this summary according to the following priority:

 Priority 1: Addressing open issues in the TR (e.g. ENs, sections to be completed, text to be updated, etc.), that should be treated first. (Proposals 1, 2, 3, 4)

 Priority 2: Topics which were already discussed in previous meeting(s) without conclusion but are not critical for SI completion and should be treated in a best effort manner (Proposals 5, 6, 15, 16, 17, 18, 19)

 Priority 3: Proposals which suggest topics to discuss in the WI phase or in other Ais, as well as detailed discussions which can be left to the WI phase. Some of these can be treated this meeting only if time permits (Proposals 7, 8, 9, 10, 11, 12, 13, 14, 20, 21, 22, 23, 24, 25, 26, 27, 28)

Priority 1:

Proposal 2 Update the TR with the following changes:

- Remove “Editor’s note: Service continuity related CP procedure is captured in 4.5.4” from section 4.5.5

- Remove “Editor’s note: RAN2 needs to consider SA3 input” from section 5.5.3 and add the sentence “Security aspects require confirmation from SA3” to the text.

- Revise the following sentence as: “For the inter-gNB cases, compared to the intra-gNB cases, potential different parts on RAN2 Uu interface in details can be discussed studied or in WI phase.” in section 4.5.4.

Proposal 3 RAN2 to conclude that L2 relay is feasible and recommends L2 relay to proceed to normative work. Conclusions on L2 relay are captured in the conclusion section of the TR using text proposals from R2-2100169 and R2-2100202 as baseline, and further finalizing the text at RAN2#113e.

Proposal 4 Comparison discussions of L2 and L3 relay (discussed in R2-2101206) are further discussed jointly with related papers from other AIs.

Discussion:

Samsung have a concern about the proposal classification; they think it implies that all the L2 open issues can be left for the normative phase, and some of the issues they think are a significant concern. They can accept P2 but think P3 is premature; they agree L2 is feasible but are not happy to recommend it for normative work without looking at the other proposals.

MediaTek are fine with P2 and observe that the status report listed the L2 and L3 architecture evaluations as the only open issue.

Nokia agree with Samsung and think removing the ENs without discussion is a bit premature.

InterDigital think based on the current status of the TR on the inter-gNB case, it is already indicated that the signalling details can be discussed in the WI; the main difference between the inter- and intra-gNB cases is RAN3-related.

Futurewei think we should not mix feasibility with TU issues (which should be discussed in plenary). They understand that we already agreed L2 is feasible and see no reason to change that conclusion.

Huawei understand that we previously agreed L2 is feasible, but it is not captured in the TR, so we should be able to agree to the feasibility part of P3. Ericsson think we need more discussion in the L2 and L3 conclusions.

InterDigital think we could take the feasibility conclusion without the part about normative work.

ZTE agree with the proposed agreements and think we should update the TR to indicate that L2 relay is feasible. They also think we could take a WA to recommend L2 for normative work.

Qualcomm have some concern that L2 and L3 wording is not aligned and we should deal with the wording first, then deal with feasibility for the two together.

vivo agree with Qualcomm and think the feasibility and recommendation for normative work can be left for the end of the meeting.

OPPO think we could confirm the feasibility decision and capture it in the TR, aligned with the LS to SA2. They also think that workload concerns are out of scope for the working group and the feasibility is a technical determination. Intel agree with OPPO.

AT&T agree that we should update the TR.

Agreements:

Update the TR with the following changes:

- Remove “Editor’s note: Service continuity related CP procedure is captured in 4.5.4” from section 4.5.5

- Remove “Editor’s note: RAN2 needs to consider SA3 input” from section 5.5.3 and add the sentence “Security aspects require confirmation from SA3” to the text.

- Revise the following sentence as: “For the inter-gNB cases, compared to the intra-gNB cases, potential different parts on RAN2 Uu interface in details can be discussed in WI phase.” in section 4.5.4.

RAN2 confirm the decision of last meeting that L2 and L3 are both feasible for U2N and U2U, aligned with the LS sent to SA2 from RAN2#112-e (this is not a conclusion on the recommendation for normative work).

Priority 2:

Proposal 5 For L2 UE to NW relay, the RRC state combination of remote UE in RRC\_INACTIVE and relay UE in RRC\_IDLE is supported

Proposal 6 For L2 UE to NW relay, the relay UE in RRC\_IDLE/RRC\_INACTIVE triggers connection establishment when it receives the first RRC message from the remote UE.

Proposal 15 RAN2 to confirm that on-demand SI request is supported for OOC remote UE.

Proposal 16 An IC remote UE requests/receives SI via the relay UE when PC5-RRC connected to a relay UE.

Proposal 17 A remote UE can receive some system information from a relay UE (e.g. by broadcast/groupcast) before it initiates a PC5-RRC connection.

Proposal 18 DedicatedSIBRequest procedure is re-used for the remote UE in RRC\_CONNECTED to request SI via the relay UE.

Proposal 19 The relay UE is aware of the SI request by a remote UE in RRC\_IDLE/RRC\_INACTIVE. Details can be discussed in the WI phase.

Discussion:

MediaTek have a concern on P5 and think the benefit of this combination has not been shown.

Lenovo wonder about the OOC case for the remote UE and whether we would define the remote UE as being in RRC\_INACTIVE. Chair understands that this would be a valid use case; Lenovo think it should be discussed.

ZTE also have a concern for P5 and think it is not necessary to restrict the gNB implementation; they understand that the relay RRC state may be determined by the gNB.

InterDigital clarify that the intention of the proposal is to keep from restricting the case where the gNB wants to put the remote UE in RRC\_INACTIVE while the relay UE is in RRC\_IDLE; so the gNB can avoid this scenario if it wants to but it would not be restricted in the spec.

Samsung have a similar concern to what was expressed by MediaTek, and wonder why we are discussing specific state combinations. They do not see the combination as sensible and think the extra work to support it is unnecessary.

Nokia think paging and service continuity need to be discussed as part of the route to a conclusion. InterDigital understand that these have been discussed in the past or are clear stage 3 aspects as reflected in previous discussion.

Huawei think the priority 3 issues include issues that are new in this meeting and we do not need to resolve all stage 3 issues in the SI phase. They would like to take the L2 conclusion papers as a baseline.

Futurewei think it’s good to have evaluation and conclusion on L2; we have agreed that we treat feasibility separately from normative work recommendations and this should make it possible to progress. On the baseline, they understand that the proposed contributions are the proposals that were made and we should be contribution driven as usual.

Ericsson think we need to resolve the open issues and should not leave study activity for the WI phase. E.g. they think inter-gNB mobility cases need to be resolved in the SI phase.

Futurewei think we can work towards a conclusion in this discussion. On inter-gNB mobility, they think the principle is clear and we can reuse the existing handover mechanism.

* [AT113-e][605][Relay] Continuation of L2 architecture issues (InterDigital)

Scope: Discuss the priority 2 proposals P6, P15-P19 from R2-2102091 and implement the agreements on the priority 1 proposals. Work towards conclusions if possible.

Intended outcome: Endorsable TP, in R2-2102098 (+summary in R2-2102110)

Deadline: Tuesday 2021-02-02 1200 UTC (for TP availability)—extended to 2021-02-04 0200 UTC to finalise TP in R2-2102116

Priority 3:

Proposal 7 RAN2 further discusses whether the remote UE or gNB informs the relay UE of a state transition of the remote UE.

Proposal 8 INACTIVE relay UE can monitor and forward CN paging for an IDLE remote UE

Proposal 9 If the combination of IDLE relay and INACTIVE remote is supported, IDLE relay UE can monitor and forward RAN paging for an INACTIVE remote UE.

Proposal 10 CONNECTED relay UE can monitor and forward CN/RAN paging for an IDLE/INACTIVE remote UE

Proposal 11 Relay UE can relay a paging message to the intended remote UE via a PC5-RRC message. Whether broadcast/groupcast signalling is allowed can be discussed in the WI phase.

Proposal 12 RAN2 further discusses whether 1) the remote UE can perform RAN area update procedure or 2) the relay UE performs RAN area update on behalf of all remote UEs

Proposal 13 The remote UE should be notified of the status (e.g. RLF) of the Uu link (for UE to NW relay)/ next hop (for UE to UE relay) from the relay UE. Details can be discussed during the WI phase.

Proposal 14 RAN2 discuss whether to support flow control for UE to NW relay and UE to UE relay.

Proposal 20 RAN2 discusses whether to support INACTIVE/IDLE relay UE for direct to indirect switching. If yes, further discuss whether Uu connection establishment between relay UE and gNB is triggered by remote UE or by network

Proposal 21 For service continuity of L2 U2N relay, remote UE perform RLC bearer (PC5 or Uu) release and add

Proposal 22 To support switching between direct/indirect and between indirect/indirect paths, perform PDCP re-establishment as in legacy HO procedure

Proposal 23 Further details related to the procedures for service continuity (in figures 4.5.4-1 and 4.5.4-2 in the TR) are discussed in the WI stage.

Proposal 24 Differences between the intra-gNB and inter-gNB cases for path switch are discussed in the WI phase.

Proposal 25 Cell (re)selection/Relay (re)selection procedures should allow the UE to select a cell or relay to support IDLE/INACTIVE mobility to direct or indirect while the UE is in coverage.

Proposal 26 Discuss relay selection/discovery proposals in [12][20][22][24][23] within their appropriate AI (8.7.3 and 8.7.4).

Proposal 27 RAN2 to discuss whether the relay UE can multiplex its own traffic along with relayed traffic in the same Uu RLC channel.

Proposal 28 Congestion on PC5 is taken into account when ensuring end to end QoS enforcement for the remote UE.

[R2-2102110](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102110%20-%20%5b605%5d%5bRelay%5d%20Continuation%20of%20L2%20Issues_summary_final.docx) (Summary of [605]) InterDigital discussion Rel-17 FS\_NR\_SL\_relay

“Easy” Agreements

[21/23 companies]

Proposal 1.2 RAN2 confirm that on demand SI request is supported via a relay UE for OOC remote UE. No update to the TR is required,

[22/23 companies]

Proposal 1.5: DedicatedSIBRequest procedure is re-used for the remote UE in RRC\_CONNECTED to request SI via the relay UE.

[21/23 companies]

Proposal 1.6: For remote UE in RRC\_IDLE/INACTIVE, how on-demand SI procedure differs from legacy can be left to normative work. (21/23 companies)

[22/23 companies]

Proposal 2.1: Add the following sentence to the conclusion section of the TR:

“RAN2 has studied direct discovery procedure, UE-to-Network Relay, and UE-to-UE Relay solutions. In this study, both Layer-2 based Relay architecture and Layer-3 based Relay architecture have both been found feasible.”

Proposal 1.1: Change the wording of step 2 in Figure 4.5.5.1-1 as follows:

Step 2. The Remote UE sends the first RRC message (i.e., RRCSetupRequest) for its connection establishment with gNB via the Relay UE, using a default L2 configuration on PC5. The gNB responds with an RRCSetup message to Remote UE. The RRCSetup delivery to the Remote UE uses the default configuration on PC5. If the relay UE had not started in RRC\_CONNECTED, it would need to do its own connection establishment as part of this step. The details for Relay UE to forward the RRCSetupRequest/RRCSetup message for Remote UE at this step can be discussed in WI phase.

Is changed to:

Step 2. The Remote UE sends the first RRC message (i.e., RRCSetupRequest) for its connection establishment with gNB via the Relay UE, using a default L2 configuration on PC5. The gNB responds with an RRCSetup message to Remote UE. The RRCSetup delivery to the Remote UE uses the default configuration on PC5. If the relay UE had not started in RRC\_CONNECTED, it would need to do its own connection establishment upon reception of a message on the default L2 configuration on PC5. The details for Relay UE to forward the RRCSetupRequest/RRCSetup message for Remote UE at this step can be discussed in WI phase.

[16/16 companies]

Proposal 3.3.1: Capture in the conclusion section for L2: “L2 Relay Meets all of the objectives of the SID.” (16/16 companies)

[16/16 companies]

Proposal 3.3.2: Capture in a common conclusion section for L2 and L3: “RAN2 recommends both L2 and L3 UE to NW and UE to UE relay can proceed to normative work” (16/16 companies)

Agreements requiring more discussion:

[21/23 companies]

Proposal 1.3 A remote UE (IC or OOC) requests/receives SI via the relay UE when PC5-RRC connected to a remote UE.

[11/16 companies]

Proposal 3.3.3: Discuss how to capture the following in the conclusion section for L2: “Mechanisms for layer-2 relay with minimum specification impact have been studied and identified by RAN2” (11/16 companies)

Discussion:

P1.1:

LG wonder what is the meaning of “default configuration on PC5” in the second line. They think this needs to be defined. InterDigital clarify that this was already in the wording of this step and the proposal does not change it. Apple have the same understanding as InterDigital.

P1.3:

Ericsson think we did not investigate the implications of forwarding the SI in this way. They understand that it is directed to the case that the relay UE is on gNB 1 and the remote UE is camped on gNB 2. For the same-gNB case, they would like to consider that the remote UE receives SI on Uu, and they think the details can be left to WI phase.

OPPO understand this approach would allow more flexibility than we need. We could leave it to WI phase but we will need to downselect at some point.

MediaTek understand that there is a majority view in favour of the proposal, and think the same mechanism can apply to inter-gNB and same-gNB cases. In the inter-gNB case, they understand that it does not make sense for the remote UE to monitor SI from two different gNBs. Also, if the remote UE can receive SI from Uu, it probably doesn’t need relaying.

Lenovo understood that we agreed the remote UE is served by the gNB of the relay UE by definition, so the inter-gNB case seems not to exist. They also think this does not exclude receiving SI from the same gNB on Uu.

Ericsson could accept if we say the remote UE can request/receive, and reception via Uu is not precluded. Lenovo wonder if then the remote UE could send an on-demand SI request to the gNB.

Nokia understand that the Uu connection could be good enough for the SI but not good enough for UP data.

P3.3.3:

InterDigital indicate that it was clarified during the discussion that this refers to the attempt to prefer solutions that meet the SI requirements while minimising standards impact. Apple have the same understanding and think this is not a L2 vs. L3 issue but about reducing the impact to the spec, so the sentence should be OK. MediaTek agree with Apple. Huawei agree with InterDigital.

vivo think “minimum” suggests that we did some comparison. Ericsson think the TP discusses standardisation impact and they are OK with this text, but they indicate they cannot accept the “minimum” language.

Chair thinks vivo’s objection would also apply to L3, where we did not do a comparison.

Samsung think we do not know enough about the scale of the spec impact of L2 yet to make this statement.

ZTE agree with InterDigital and Huawei and think we can say we have studied minimum-spec-impact solutions from L2 perspective. They also agree that vivo’s concern would apply also to L3. Intel agree with ZTE.

Qualcomm think we should be careful about the meaning of “minimum” since it appears in the SI objectives, and they agree with Ericsson and Samsung that more study is needed for this point.

Futurewei observe the objective was to study mechanisms with minimum standards impact, i.e. that is the only thing we should have been studying. They consider that for both L2 and L3, the proposals have attempted to minimise spec impact, and the difference is only whether we support a particular function; if the function is supported, we should understand that the solution was selected for minimum impact. They also think if we mention this in the conclusion, we should do it similarly for L2/L3.

AT&T are fine with the wording in the proposal, but wonder if we could add something to clarify that this is not a L2/L3 impact comparison. They agree with Futurewei’s point that this applies to all the solutions we have selected.

LG agree with Qualcomm and Samsung that the wording should be handled carefully.

Chair suggests the modification: “Mechanisms for layer-2 relay have been studied and identified by RAN2 with solutions selected for minimum specification impact”.

Ericsson think the current TPs are good enough, but if we want to capture something like this, they disagree that we have taken minimum specification impact. E.g., if we have delivery of system information over PC5, they understand that would increase the specification impact as compared to receiving it on Uu.

Huawei suggest “Mechanisms, which have been studied and identified by RAN2, are selected to minimise specification impact”.

InterDigital clarify this was intended to document how we have approached the work in RAN2, not to measure the spec impact of specific solutions. In that sense it is different from the spec impact section.

Chair suggests the modification: “Mechanisms for layer-2 relay have been studied and identified by RAN2, striving for minimum specification impact”. Ericsson would be OK with this. Nokia also. Nokia think having the adaptation layer over PC5 is an example of not targeting minimum specification impact.

OPPO wonder if we can extend this sentence to cover L3 as well.

Agreements:

Proposal 1.2 RAN2 confirm that on demand SI request is supported via a relay UE for OOC remote UE. No update to the TR is required,

[22/23 companies]

Proposal 1.5: DedicatedSIBRequest procedure is re-used for the remote UE in RRC\_CONNECTED to request SI via the relay UE.

[21/23 companies]

Proposal 1.6: For remote UE in RRC\_IDLE/INACTIVE, how on-demand SI procedure differs from legacy can be left to normative work. (21/23 companies)

[22/23 companies]

Proposal 2.1: Add the following sentence to the conclusion section of the TR:

“RAN2 has studied direct discovery procedure, UE-to-Network Relay, and UE-to-UE Relay solutions. In this study, both Layer-2 based Relay architecture and Layer-3 based Relay architecture have both been found feasible.”

Proposal 1.1: Change the wording of step 2 in Figure 4.5.5.1-1 as follows:

Step 2. The Remote UE sends the first RRC message (i.e., RRCSetupRequest) for its connection establishment with gNB via the Relay UE, using a default L2 configuration on PC5. The gNB responds with an RRCSetup message to Remote UE. The RRCSetup delivery to the Remote UE uses the default configuration on PC5. If the relay UE had not started in RRC\_CONNECTED, it would need to do its own connection establishment as part of this step. The details for Relay UE to forward the RRCSetupRequest/RRCSetup message for Remote UE at this step can be discussed in WI phase.

Is changed to:

Step 2. The Remote UE sends the first RRC message (i.e., RRCSetupRequest) for its connection establishment with gNB via the Relay UE, using a default L2 configuration on PC5. The gNB responds with an RRCSetup message to Remote UE. The RRCSetup delivery to the Remote UE uses the default L2 configuration on PC5. If the relay UE had not started in RRC\_CONNECTED, it would need to do its own connection establishment upon reception of a message on the default L2 configuration on PC5. The details for Relay UE to forward the RRCSetupRequest/RRCSetup message for Remote UE at this step can be discussed in WI phase.

[16/16 companies]

Proposal 3.3.1: Capture in the conclusion section for L2: “L2 Relay Meets all of the objectives of the SID.” (16/16 companies)

[16/16 companies]

Proposal 3.3.2: Capture in a common conclusion section for L2 and L3: “RAN2 recommends both L2 and L3 UE to NW and UE to UE relay can proceed to normative work” (16/16 companies)

[21/23 companies]

Proposal 1.3 A remote UE (IC or OOC) can request/receive SI via the relay UE when PC5-RRC connected to a remote UE. Reception via Uu for IC remote UE can be discussed in WI.

Capture in the TR: “Mechanisms for layer-2 relay have been studied and identified by RAN2, striving for minimum specification impact”, and a matching sentence for L3.

[R2-2102098](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102098%20-%20%5b605%5d%5bRelay%5d%20conclusion_TP.docx) (TP from [605]) InterDigital discussion Rel-17 FS\_NR\_SL\_relay

* Revised in R2-2102116

[R2-2102116](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102116%20-%20TP%20for%20%5b605%5d_final.docx) (TP from [605]) InterDigital discussion Rel-17 FS\_NR\_SL\_relay

* Endorsed

The following documents will not be treated individually

[R2-2100111](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100111%20-%20Left%20issues%20on%20L2%20Relay.docx) Left issues on L2 Relay OPPO discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100124](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100124%20-%20Remaining%20issues%20on%20L2%20U2N%20relay.doc) Remaining issues on L2 U2N relay Qualcomm Incorporated discussion Rel-17

R2-2100125 Remaining issues on service continuity of L2 U2N relay Qualcomm Incorporated discussion Rel-17 FS\_NR\_SL\_relay Late

* Withdrawn

[R2-2100169](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100169%20Evaluation%20and%20Conclusion%20for%20L2%20UE-to-Network%20Relay%20and%20L2%20UE-to-UE%20Relay%20v7.docx) Evaluation and Conclusion for L2 UE-to-Network Relay and L2 UE-to-UE Relay MediaTek Inc., Apple, Interdigital, Futurewei, Huawei, Hisilicon, Convida discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100202](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100202%20Feasibility%20for%20Layer2%20Relay.docx) Feasibility for Layer2 Relay CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100300](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100300%20Discussion%20on%20remaining%20issues%20on%20L2%20UE-to-Network%20Relay.docm) Discussion on remaining issues on L2 UE-to-Network Relay ZTE Corporation discussion

[R2-2100520](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100520%20(R17%20SL%20Relay%20SI_AI8721%20CP%20Aspects).doc) Remaining Control Plane Aspects for L2 Relays InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100521](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100521%20(R17%20SL%20Relay%20SI%20AI8721%20UP%20Aspects).doc) Discussion on L2 Relay Architecture and QoS InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100535](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100535%20-%20Further%20discussions%20on%20L2%20SL%20relay.docx) Further discussions on L2 SL relay Ericsson discussion Rel-17 FS\_NR\_SL\_relay R2-2009230

[R2-2100656](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100656.doc) Remaining issues for L2 relay Spreadtrum Communications discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100867](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100867%20Layer%202%20Relay%20solutions.doc) Discussion on Layer 2 Solutions for UE-to-NW relay and UE-to-UE relay Apple discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100910](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100910.doc) Remaining issues on L2 relay Sony discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101083](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101083%20L3%20vs%20L2%20relaying%20v4.doc) L3 vs L2 relaying Samsung Electronics GmbH discussion Withdrawn

[R2-2101107](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101107%20Considerations%20on%20the%20N2U%20and%20U2U%20relays_v2.0.doc) Consideration on U2N relay and U2U relay Lenovo, Motorola Mobility discussion Rel-17

[R2-2101179](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101179_Remaining%20issues%20on%20L2%20U2N%20Relay.doc) Remaining issues on L2 U2N Relay vivo discussion Rel-17

[R2-2101206](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101206%20L3%20vs%20L2%20relaying%20v4.doc) L3 vs L2 relaying Samsung, Ericsson, Nokia, Nokia Shanghai Bell discussion

[R2-2101300](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101300%20Inter-gNB%20Path%20Switching%20for%20L2%20U2N%20Relay.docx) Inter-gNB Path Switching for L2 U2N Relay Intel Corporation discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101601](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101601.doc) Open issues on L2 relay Xiaomi communications discussion

[R2-2101623](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101623%20Remaining%20issue%20on%20RRC%20state%20for%20L2%20relay.docx) Remaining issue on RRC state for L2 relay CMCC discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101754](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101754%20Discussion%20on%20CP%20protocol%20stack%20for%20L2%20U2U%20relay.docx) Discussion on CP protocol stack for L2 U2U relay ASUSTeK discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101768](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101768.docx) RRC status transition reporting procedure LG Electronics Inc discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101782](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101782%20Clean-up%20of%20L2%20sidelink%20relay.docx) Clean-up of L2 sidelink relay Huawei, HiSilicon discussion Rel-17 FS\_NR\_SL\_relay

#### 8.7.2.2 Layer 3 relay

Open issues and feasibility for layer 3 relay design.

This agenda item will use a summary document (Ericsson).

Summary document

[R2-2102221](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102221-%20Summary%20document%20for%20AI%208.7.2.2.docx) Summary document for AI 8.7.2.2 Ericsson discussion Rel-17 FS\_NR\_SL\_relay

=> Revised in R2-2102247

[R2-2102247](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102247-%20Summary%20document%20for%20AI%208.7.2.2.docx) Summary document for AI 8.7.2.2 Ericsson discussion Rel-17 FS\_NR\_SL\_relay

Easy to agree

Proposal 1 Remove from 3GPP TR 38.836 the following note:

“Editor note: whether other QoS solution (e.g. whether gNB can perform PDB split) is introduced depends on SA2.”

Proposal 2 Align the description in 3GPP TR 38.836 with the SA2 conclusion regarding the QoS of L3 UE-to-Network Relay.

Proposal 4 Remove from 3GPP TR 38.836 the following editor’s note:

“Editor note: whether new PC5-S signaling is also introduced depends on SA2.”

Proposal 5 Move the following editor’s note for L3 UE-to-UE relay in 3GPP TR 38.836 into normative text:

“Editor Note: Whether the SA2 captured solutions can satisfy the security requirement depends on SA3.”

Proposal 6 Move the following editor’s note for L3 UE-to-Network relay in 3GPP TR 38.836 into normative text:

“Editor Note: Whether the SA2 captured solutions can satisfy the security requirement depends on SA3.”

Proposal 7 RAN2 to confirm that there is no HO mechanism for L3 UE-To-Network relay since the UE is invisible to the gNB.

Proposal 10 RAN2 to conclude that no showstoppers have been identified and that L3 UE-to-Network and L3 UE-to-UE relay are feasible from RAN2 perspective.

Discussion:

MediaTek would like to understand if there is any conclusion discussion for L3; they note that there is no conclusion recommendation in the proposals. Ericsson think the one paper proposing a conclusion was unduly negative.

Huawei wonder why the TP from R2-2101781 would not be a suitable baseline for conclusion as it follows the objectives of the SID. Ericsson have concerns with the analysis but time is limited.

Huawei think on P2 it is not clear how to align the wording. They also think the ENs in P1 and P4 should be moved to normative text.

Apple think P10 should be clarified as not a recommendation for normative work. Chair thinks we already agreed the content of P10 above.

Agreements:

Change to normative text the following note:

“Editor note: whether other QoS solution (e.g. whether gNB can perform PDB split) is introduced depends on SA2.”

Change to normative text the following editor’s note:

“Editor note: whether new PC5-S signaling is also introduced depends on SA2.”

Move the following editor’s note for L3 UE-to-UE relay in 3GPP TR 38.836 into normative text:

“Editor Note: Whether the SA2 captured solutions can satisfy the security requirement depends on SA3.”

Move the following editor’s note for L3 UE-to-Network relay in 3GPP TR 38.836 into normative text:

“Editor Note: Whether the SA2 captured solutions can satisfy the security requirement depends on SA3.”

RAN2 to confirm that there is no HO mechanism for L3 UE-To-Network relay since the UE is invisible to the gNB.

* [AT113-e][606][Relay] Continuation of L3 architecture issues (Ericsson)

Scope: Discuss the “to be discussed” proposals P2/P3/P8/P9 from the L3 summary, and implement the agreements. Work towards conclusions if possible.

Intended outcome: Endorsable TP, in R2-2102097 (+summary in R2-2102101)

Deadline: Tuesday 2020-02-02 1200 UTC—extended to 2021-02-04 0200 UTC to finalise TP in R2-2102115

To be discussed

Proposal 2 Align the description in 3GPP TR 38.836 with the SA2 conclusion regarding the QoS of L3 UE-to-Network Relay.

Proposal 3 RAN2 to capture in 3GPP TR 38.836 the Sol#45 within 3GPP TR 23.752 for the QoS support for L3 UE-to-Network relay with N3IWF.

Proposal 8 RAN2 to consider allowing the Relay UE to transfer PDCP SN status considering the second hop PDCP PDU/SDU delivery status during path switching in order to support lossless service continuity.

Proposal 9 RAN2 to consider the study of optional AS layer-based solutions to enable PDCP SN status during path switch though service continuity is guaranteed by higher layers.

Proposal 11 RAN2 to capture in the 3GPP TR 38.836 that it is recommended to standardize L3 UE-to-Network and UE-to-UE relay in Rel-17.

Proposal 12 RAN2 to add in 3GPP TR 38.836 the evaluation results for L3 UE-to-Network and L3 UE-to-UE relay provided in [9], Annex 4.

[R2-2102101](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102101-%20Summary%20of%20%5bAT113-e%5d%5b606%5d%5bRelay%5d%20Continuation%20of%20L3%20architecture%20issues.docx) (Summary of [606]) Ericsson discussion Rel-17 FS\_NR\_SL\_relay

Proposal 1 For L3 U2N, the Relay UE does not transfer PDCP SN status considering the second hop PDCP PDU/SDU delivery status during path switching in order to support lossless service continuity.

Proposal 2 For L3 U2N, the study of optional AS layer-based solutions to enable PDCP SN status during path switch though service continuity is not pursued.

Discussion:

No comments

Agreements:

For L3 U2N, the Relay UE does not transfer PDCP SN status considering the second hop PDCP PDU/SDU delivery status during path switching in order to support lossless service continuity.

For L3 U2N, the study of optional AS layer-based solutions to enable PDCP SN status during path switch though service continuity is not pursued.

[R2-2102097](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102097-%20%5bAT113-e%5d%5b606%5d%5bRelay%5d%20TP%20on%20conclusions%20for%20L3%20relay%20architecture.docx) (TP from [606]) Ericsson discussion Rel-17 FS\_NR\_SL\_relay

InterDigital think there is a section on service continuity for the UE-to-UE case, which we did not discuss. This is not the case in the L2 section and they wonder how to align.

TP can be revised offline for alignment with the L2 TP.

Futurewei want to clarify that we do not need a section here on the standards impact.

Samsung think we were converging on this idea but did not make an official decision. Ericsson have the same understanding.

InterDigital want to clarify that this part of the discussion should apply to both L2 and L3.

Apple and Futurewei think we could agree to remove the impact sections.

Apple ask what will happen to the additional proposals at the end of the document (P3-P7). Ericsson clarify these are leftovers from R2-2102247, not proposals for this document, and were already discussed (they are in an annex of this document).

Nokia strongly disagree with removing the impact sections as they understand that this is a goal of the SI. Samsung and Ericsson agree; Samsung think this is an opportunity to expand upon the details of the impact of the solution.

Intel, Huawei, MediaTek, CATT, Convida, OPPO all agree to remove the sections. Huawei think it is more in RAN plenary scope to discuss this.

Futurewei think the only way forward is to have a common statement on both L2 and L3, and suggest we could keep the impact sections with the same content. We have the agreement for the conclusion that we strive to minimise standards impact in both cases; in this light they consider that there is no difference between L2 and L3 in terms of meeting the minimum impact goal.

Samsung do not see it as a RAN plenary issue and think the WG needs to provide this information to the plenary, and think the sections will not contain the same contents because there are differences between the solutions.

Offline discussion should take into account whether to have a section on standards impact, with the conclusion on this aspect to affect both L2 and L3. (Currently both TPs have one.)

* Revised in R2-2102115

[R2-2102115](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102115-%20%5bAT113-e%5d%5b606%5d%5bRelay%5d%20TP%20on%20conclusions%20for%20L3%20relay%20architecture_v15_Rapp.docx) (TP from [606]) Ericsson discussion Rel-17 FS\_NR\_SL\_relay

Ericsson clarify this version includes the standards impact section.

Nokia are not sure how it was decided to remove the standards section in the L2 proposal. InterDigital clarify it was discussed under L3 and the L2 proposal followed that decision. The common section that was included in the L2 proposal captures that we strive for minimum standards impact for both L2 and L3, but details of standardisation impact are not there.

Ericsson think we could add in the common section the sentence currently in 6.1.2.8, indicating that the work is mainly in SA for L3 (“RAN2 concluded the standards support of L3 UE-to-Network Relay is mainly at SA.”). Philips agree.

Futurewei think this does not match the agreements taken in the L2 discussion where the common section was handled. They wonder if RAN2 should be concluding on impact in SA.

Qualcomm would prefer to have a standards impact section (also in the L2 TP) and think we could have similar wording for L2 and L3.

Intel agree with Qualcomm and think we should be consistent with L2 and L3 sections. Removing 6.1.2.8 from this TP would also be an option, with a short email discussion to decide whether to reintroduce it.

Huawei are fine with the removal of standards impact section and think we could endorse the TP without it and continue working on whether to capture something in the common section. They think the wording should be common for L2 and L3.

Nokia think the removal took place without a proper email discussion and cannot endorse the TP without including it. They also think it would be technically incorrect to capture in the common section, and that we are not evaluating SA workload.

OPPO think it does not make a big difference if we have separate sections or a common section, and it would be OK to capture a sentence saying the L2 impact is mainly in RAN and the L3 impact is mainly in SA.

Samsung agree with Nokia and are surprised the section was removed from the L2 TP. They would prefer to have the separate sections as in the current TP, but feel we need the content of the sentences.

InterDigital think we are saying the same thing if the information is in a common section vs. separate sections.

Futurewei think it is strange that we cannot approve other sections without including this section, since the content is independent. They support the way forward to have a common section, and if people want to have a standards impact statement we can discuss offline but should not hold up the endorsement of other section.

Chair asks if we can accept the OPPO suggestion.

vivo can compromise on OPPO’s suggestion, but we should have the impact captured.

Qualcomm can also accept the compromise. Nokia and Apple also.

Intel think there are other pending comments from the L3 discussion. Ericsson think most of these comments were addressed and the remainder were somewhat editorial, and any misalignments can be resolved in TR implementation.

* Endorsed with the removal of the standards impact section.

Agreements:

Capture in the common section as a baseline: “The standards impact of L2 is principally in RAN and the standards impact of L3 is principally in SA.” Wording can be polished in TR implementation.

Standards impact section to be removed from the L3 text proposal.

The following documents will not be treated individually

[R2-2100110](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100110%20-%20Left%20issues%20on%20L3%20Relay.docx) Left issues on L3 Relay OPPO discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100122](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100122%20-%20Remaining%20issues%20of%20L3%20relay.doc) Remaining issues of L3 relay Qualcomm Incorporated discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100203](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100203%20Feasibility%20for%20Layer3%20Relay.docx) Feasibility for Layer3 Relay CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100301](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100301%20Consideration%20on%20QoS%20of%20L3%20relay.doc) Consideration on QoS of L3 relay ZTE Corporation discussion

[R2-2100548](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100548%20QoS%20for%20SL%20L3%20UE-to-Nwk%20Relay.docx) QoS for L3 UE-to-Network Relay Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100549](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100549%20SL%20L3%20U2N%20relay%20lossless%20path%20switching.docx) Path switching enhancement for L3 UE-to-Network relay Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101009](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101009_Remaining_Open_Issues_L3_Relay.docx) Remaining Open Issues for L3 Relay Fraunhofer HHI, Fraunhofer IIS discussion Rel-17

[R2-2101178](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101178%20L3%20SL%20Relay%20Architecture.doc) L3 SL Relay Architecture vivo discussion Rel-17

[R2-2101781](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101781%20Evaluation%20and%20conclusion%20for%20L3%20sidelink%20relay.docx) Evaluation and conclusion for L3 sidelink relay Huawei, HiSilicon, MediaTek Inc., Interdigital, Apple, Futurewei, Convida Wireless, Spreadtrum Communications discussion Rel-17 FS\_NR\_SL\_relay

### 8.7.3 Discovery model/procedure for sidelink relaying

This agenda item will use a summary document (CATT).

Summary document

[R2-2102224](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102224%20Summary%20document%20for%20AI%208%207%203.docx) Summary document for AI 8.7.3 CATT discussion Rel-17 FS\_NR\_SL\_relay

* [AT113-e][607][Relay] Continuation of discovery open issues (CATT)

Scope: Continue the discussion of R2-2102224.

Intended outcome: Updated summary, in R2-2102099 (+TP in R2-2102111)

Deadline: Tuesday 2021-02-02 1200 UTC

[R2-2102099](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102099%20-%20%5bAT113-e%5d%5b607%5d%5bRelay%5d%20Continuation%20of%20discovery%20open%20issues.docx) (Summary of [607]) CATT discussion Rel-17 FS\_NR\_SL\_relay

[Easy]

[24:0]Proposal 1: Remove following editor note and address this issue in WI phase:

Editor note: For Remote UE in RRC\_CONNECTED, the detail of configuration provided by serving gNB is FFS.

[24:0]Proposal 2: For both L2 and L3 U2N and U2U relay, RAN2 confirm the working assumption that discovery model A and model B are supported.

[20:4]Proposal 3: Introduce a new LCID for discovery message for separate resource pool, if agreed, same as shared resource pool.

Proposal 4: Remove following editor note and address this issue in WI phase:

Editor note: For Remote UE out of coverage, it is FFS whether transmission of discovery message is based on configuration from network if the Remote UE is already connected with network through a Relay UE.

[Can be discussed in online session]

[16:7]Proposal 5: Update TR 38.836 to clarify that integrated PC5 unicast link establishment procedure can be supported for U2U architecture based on SA2 conclusion.

[12:10]Proposal 6: RAN2 can further discuss which of the following options can be adopted as sidelink discovery protocol stack in SI phase:

-Option 1: Updating TR 38.836 to clarify the sidelink discovery protocol stack is depending on SA2

-Option 2: Updating the protocol stack for discovery message as Discovery/PDCP/RLC/MAC/PHY

Discussion:

P3:

Xiaomi think we could remove “if agreed”. CATT agree.

P6:

MediaTek think this issue can be left to WI phase.

vivo have the same view as MediaTek and think it will be decided later in SA2.

Huawei also think it can be postponed and handled by the TR rapporteur if there is an issue.

Qualcomm also agree.

OPPO think it is clear from SA2 that this is different from PC5 signalling, and are not sure what depends on SA2. Their understanding from SA2 colleagues is that the note suggesting PC5 signalling is out of date. They think if we refer to SA2 with no protocol stack in the TR, it is unclear.

Samsung agree with OPPO and think we should follow the SA2 LS and capture the protocol stack (option 2).

Ericsson also agree with OPPO and think the protocol stack is clear.

Nokia have the same view as OPPO. ZTE as well.

Agreements:

Remove following editor note and address this issue in WI phase:

Editor note: For Remote UE in RRC\_CONNECTED, the detail of configuration provided by serving gNB is FFS.

For both L2 and L3 U2N and U2U relay, RAN2 confirm the working assumption that discovery model A and model B are supported.

Introduce a new LCID for discovery message for separate resource pool, same as shared resource pool.

Remove following editor note and address this issue in WI phase:

Editor note: For Remote UE out of coverage, it is FFS whether transmission of discovery message is based on configuration from network if the Remote UE is already connected with network through a Relay UE.

Update TR 38.836 to clarify that integrated PC5 unicast link establishment procedure can be supported for U2U architecture based on SA2 conclusion.

Updating the protocol stack for discovery message as Discovery/PDCP/RLC/MAC/PHY

[R2-2102111](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102111%20-%20TP%20of%20AI%208.7.3.docx) (TP from [607]) CATT discussion Rel-17 FS\_NR\_SL\_relay

* Endorsed

The following documents will not be treated individually

[R2-2100100](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100100%20Remaining%20issues%20of%20Relay%20discovery%20and%20(re)selection.docx) Remaining issues of Relay discovery and (re)selection OPPO discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100126](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100126%20-%20Remaining%20issues%20on%20discovery%20and%20relay%20(re)selection.doc) Remaining issues on discovery and relay (re)selection Qualcomm Incorporated discussion Rel-17

[R2-2100152](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100152.docx) Proposal of items to be examined on discovery and relay (re-)selection for UE-to-UE relay in WI phase Mitsubishi Electric Co. discussion Rel-17

[R2-2100204](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100204%20Miscellaneouse%20Issues%20on%20Relay%20Discovery.docx) Miscellaneouse Issues on Relay Discovery CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100308](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100308%20Discussion%20on%20%20remaining%20issues%20for%20sidelink%20discovery.doc) Discussion on remaining issues for sidelink discovery ZTE Corporation discussion

[R2-2100522](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100522%20(R17%20SL%20Relay%20SI%20AI873%20Discovery).doc) Discovery Procedure for sidelink relay InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100533](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100533%20-%20Remaining%20aspects%20for%20discovery.docx) Remaining aspects for discovery Ericsson discussion Rel-17 FS\_NR\_SL\_relay R2-2009228

[R2-2100534](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100534%20-%20Remaining%20aspects%20for%20relay%20selection%20and%20reselection.docx) Remaining aspects for relay (re)selection Ericsson discussion Rel-17 FS\_NR\_SL\_relay R2-2009229

[R2-2100624](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100624.docx) On SL discovery for relaying Intel Corporation discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100658](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100658%20Discussion%20on%20remaining%20issues%20on%20relay%20discovery.docx) Discussion on remaining issues on relay discovery Spreadtrum Communications discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100707](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100707_relay_reselection.doc) Relay reselection based on discovery Kyocera discussion Rel-17

[R2-2100726](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100726_discovery.doc) Relay discovery considerations Kyocera discussion Rel-17

[R2-2100804](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100804%20Discussion%20on%20sidelink%20relay%20discovery.doc) Discussion on sidelink relay discovery SHARP Corporation discussion

[R2-2100868](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100868%20Remaining%20isuse%20on%20SL%20relay%20discovery.doc) Discussion on remaining issues on relay discovery Apple discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100924](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100924%20protocol%20stack%20for%20sidelink%20relay%20discovery%20message.doc) Protocol stack for discovery message Samsung Electronics discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100925](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100925%20Clarification%20on%20AS%20layer%20differentiation%20for%20discovery%20message.doc) Clarification on AS layer differentiation for discovery message Samsung Electronics discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100926](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100926%20discovery%20configuration%20for%20OOC%20remote%20UE.doc) Discovery configuration for Remote UE out of coverage Samsung Electronics discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101108](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101108%20Relay%20discovery%20in%20L2%20and%20L3%20relay%20case%20v2.0.doc) Relay Discovery in L2 and L3 relay case Lenovo, Motorola Mobility discussion Rel-17

[R2-2101181](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101181_Remaining%20issues%20of%20sidelink%20relay%20discovery%20procedure.doc) Remaining issues of sidelink relay discovery procedure vivo discussion Rel-17

[R2-2101211](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101211%20UE-to-Nwk%20Relay%20Discovery%20and%20(Re)selection%20for%20Path%20Switching.docx) UE-to-Nwk Relay Discovery and (Re)selection for Path Switching in SL Relay Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101597](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101597.doc) Discussion on relay discovery regarding non SL relay capable gNB Xiaomi communications discussion

[R2-2101624](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101624%20Relay%20discovery%20and%20(re)selection.docx) Relay discovery and (re)selection CMCC discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101783](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101783%20Discussion%20on%20the%20discovery%20procedure.docx) Discussion on the discovery procedure Huawei, HiSilicon discussion Rel-17 FS\_NR\_SL\_relay

### 8.7.4 Other

Including any remaining open issues on topics without separate agenda items.

This agenda item will use a summary document (OPPO).

Summary document

[R2-2102239](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102239%20-%20Summary%20of%20AI%208.7.4_v2.2.docx) Summary document for AI 8.7.4 OPPO discussion

* [AT113-e][604][Relay] Issues from agenda item 8.7.4 (OPPO)

Scope: Discuss the proposals from R2-2102239, determine what needs to be resolved in the study item phase, and converge on the critical proposals

Intended outcome: Summary to be discussed in online session, in R2-2102093; summary of extension in R2-2102119

Deadline: Tuesday 2021-02-02 1200 UTC – extended to Thursday 2021-02-04 0200 UTC for discussion on P5; either we capture in the TR that simultaneous connections are left for normative phase, or we do not capture anything either way.

[R2-2102093](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102093%20-%20Summary%20of%20AI%208.7.4_Phase1_Report.docx) (Summary of [604]) OPPO discussion

Easy:

Proposal 1 Move the note “ Editor note: RAN2 will strive for a common solution to the in- and out-of-coverage cases.” into normative text.

Proposal 2 Remove the note of “Editor note: RAN2 will strive for a common solution between the same cell and different cell cases for this scenario. If a common solution is not possible and impacts are found to supporting different cell case, RAN2 works on the same cell case with higher priority.”

Proposal 3 As in LTE, an in-coverage remote UE searches for a candidate relay UE if direct Uu link quality of the remote UE is below a configured threshold

Proposal 4 Capture in RAN2 TR that Solution#8 and Solution#50 in TR 23.752 are taken as baseline solution for L2 and L3 UE-to-UE relay reselection, and solution#8 and solution#11 in TR 23.752 are taken as baseline solution for L3 UE-to-UE relay selection.

Proposal 6 How to perform RSRP measurement based on RSRP of discovery message and/or SL-RSRP if remote UE has PC5-RRC connection with relay UE can be decided in WI phase.

For discussion:

Proposal 5 Whether to support simultaneous direct (via Uu) and indirect (via PC5 through a L3 UE-to-Network Relay UE) is left to WI phase in contribution-driven manner.

Discussion:

P4:

Kyocera understand that solution#11 applies to L2 and L3, and wonder why it is only adopted here for L3. OPPO clarify that in the SA2 TR, although solution#11 includes both L2 and L3, the conclusion does not apply it to both cases, so this aligns with the SA2 conclusions.

P5:

Lenovo wonder what the proposal means in practice; will this affect WI scoping in plenary?

Huawei think we could skip this proposal to save time. MediaTek understand we would be clarifying that in WI stage companies are free to contribute on this topic.

Lenovo indicate that we could capture something in the TR. ZTE agree and think it could be discussed in plenary whether to introduce this feature in the normative phase.

Xiaomi think this was a late proposal and should not be captured in the TR. Apple have the same view and think it is not an essential feature.

Lenovo consider it essential for the coverage extension objective of the SI, and suggest we could have a post-meeting short discussion to capture it.

Qualcomm think this should be common for L2 and L3 as it is a scenario issue rather than specific to an architecture.

vivo think the proposal was originally intended also for L2.

Agreements:

Move the note “ Editor note: RAN2 will strive for a common solution to the in- and out-of-coverage cases.” into normative text.

Remove the note of “Editor note: RAN2 will strive for a common solution between the same cell and different cell cases for this scenario. If a common solution is not possible and impacts are found to supporting different cell case, RAN2 works on the same cell case with higher priority.”

As in LTE, an in-coverage remote UE searches for a candidate relay UE if direct Uu link quality of the remote UE is below a configured threshold

Capture in RAN2 TR that as captured in SA2 TR, Solution#8 and Solution#50 in TR 23.752 are taken as baseline solution for L2 and L3 UE-to-UE relay reselection, and solution#8 and solution#11 in TR 23.752 are taken as baseline solution for L3 UE-to-UE relay selection.

How to perform RSRP measurement based on RSRP of discovery message and/or SL-RSRP if remote UE has PC5-RRC connection with relay UE can be decided in WI phase.

[R2-2102119](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102119%20-%20Summary%20of%20AI%208.7.4_Phase3.docx) (Summary of extension of [604]) OPPO discussion

OPPO clarify nothing needs to be captured from this summary.

* Noted

[R2-2102112](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102112%20-%20TP%20of%20AI%208.7.4_Phase1_Report.docx) (TP from [604]) OPPO discussion

* Revised in R2-2102118

[R2-2102118](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102118%20-%20TP%20of%20AI%208.7.4_Phase3.docx) (TP from [604]) OPPO discussion

* Endorsed
* [Post113-e][601][Relay] Implementation of endorsed TPs (OPPO)

Scope: Implement the TPs and finalise the TR. Common section uses the L2 TP as baseline with the addition of the sentence on spec impact that was agreed under the L3 discussion.

Intended outcome: Endorsed TR

Deadline: Short

The study item is complete from RAN2 perspective

The following documents will not be treated individually

[R2-2100109](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100109%20-%20Left%20issues%20on%20Scenario%20and%20L23%20accessment.docx) Left issues on Scenario and L23 accessment OPPO discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100123](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100123%20-%20Finalize%20the%20comparison%20and%20conclusion%20section%20of%20TR38836.doc) Finalize the comparison and conclusion section of TR 38.836 Qualcomm Incorporated discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100171](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100171%20Discussion%20on%20Remote%20UEs%20in%20RRC%20Inactive.docx) Discussion on Remote UEs in RRC Inactive MediaTek Inc. discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100205](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100205%20Further%20Clarification%20on%20the%20Sidelink%20Relay%20Scenario.docx) Further Clarification on the Sidelink Relay Scenario CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100309](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100309%20Comparison%20of%20L2%20and%20L3%20Relay.doc) Comparison of L2 and L3 Relay ZTE Corporation discussion

[R2-2100444](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100444%20Remote%20UE%20connectivity.docx) Remote UE connectivity MediaTek Inc. discussion Rel-17

[R2-2100523](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100523%20(R17%20SL%20Relay%20SI%20AI874%20Relay%20selection).doc) Relay selection and reselection InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100550](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100550_Open_Issues_on_NR_Sidelink_Relaying.docx) Open Issues on NR Sidelink Relaying Fraunhofer IIS, Fraunhofer HHI discussion

[R2-2100616](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100616_SLRelayConclusions_Intel.docx) Conclusion on the feasibility of L2 and L3 based Sidelink Relaying Intel Corporation discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100625](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100625.docx) Further details on relay reselection Intel Corporation discussion Rel-17 FS\_NR\_SL\_relay

[R2-2100980](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100980-%20Comparative%20analysis%20of%20L2%20and%20L3%20SL%20Relay%20architecture.docx) Comparative analysis of L2 and L3 SL Relay architecture Ericsson, Samsung, Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101180](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101180_Consideration%20on%20Control%20Plane%20messages%20transmission%20path%20for%20remote%20UE.docx) Consideration on Control Plane messages transmission path for remote UE vivo, Philips, Lenovo, Motorola Mobility, AT&T discussion Rel-17

[R2-2101210](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101210%20SI%20acquisition,%20CN%20Registration%20and%20RNAU.doc) SI acquisition, CN Registration and RNAU Lenovo, Motorola Mobility discussion FS\_NR\_SL\_relay

[R2-2101325](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101325%20Support%20of%20idle%20mode%20mobility%20for%20remote-UE%20in%20SL%20U2N%20relay.docx) Support of idle mode mobility for remote-UE in SL UE-to-Nwk relay Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101453](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101453%20Providing%20Reliability%20and%20Coverage%20using%20Relays.doc) Providing Reliability and Coverage using Relays Lenovo, Motorola Mobility, Philips, AT&T, Fujitsu discussion FS\_NR\_SL\_relay

[R2-2101784](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101784%20Consideration%20on%20relay%20selection%20and%20reselection.docx) Consideration on relay selection and reselection Huawei, HiSilicon discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101778](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101778.docx) Further consideration of relay selection and reselection criteria LG Electronics Inc. discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101785](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Docs\R2-2101785.zip) Relay UE selection and reselection prioritization LG Electronics Inc. discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101788](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101788.docx) Relay reselection using discovery message and sidelink unicast link LG Electronics Inc. discussion Rel-17 FS\_NR\_SL\_relay

[R2-2101890](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101890-discussion%20on%20RRC%20procedures%20of%20L2%20U2N%20relay.doc) discussion on RRC procedures of L2 U2N relay ETRI discussion Rel-17 FS\_NR\_SL\_relay

## 8.11 NR positioning enhancements SI

(FS\_NR\_pos\_enh; leading WG: RAN1; REL-17; WID: RP-202094)

Time budget: 1 TU

Tdoc Limitation: 4 tdocs

Email max expectation: 3 threads

### 8.11.1 Organizational

Rapporteur inputs and other organizational documents. Documents in this AI do not count towards the tdoc limitation.

WI organisation

[R2-2100649](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100649%20Consideration%20on%20R17%20positioning%20WI%20Scope.docx) Consideration on R17 positioning WI Scope Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh

* Noted

Study item is concluded from RAN2 perspective

TR management

[R2-2101387](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101387%20LS%20to%20capture%20TP%20for%20TR%2038.857.docx) draft LS to capture Text Proposal for TR 38.857 Ericsson LS out Rel-17 To:RAN1

* Revised in R2-2102103

[R2-2102103](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102103%20LS%20to%20RAN1.docx) draft LS to capture Text Proposal for TR 38.857 Ericsson LS out Rel-17 To:RAN1

TPs on latency analysis and on-demand PRS to be attached.

* Approved as R2-2102114

[R2-2102122](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102122.docx) (Draft LS for additional TPs) Ericsson LS out Rel-17 To:RAN1

Intel note we should conclude the SI before saying we have done so in the LS.

Ericsson think on latency we may need to include the RAN3 notes. Intel understand that RAN3 have also sent their LS to RAN1 and RAN1 can incorporate it themselves.

* Approved as R2-2102125

[R2-2101388](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Docs\R2-2101388.zip) Report on TR 38.857 Ericsson report Rel-17

Nokia indicate this only contains the cover sheet. Ericsson clarify this is just a notification that the TR has been submitted.

* Noted

[R2-2102277](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102277_R3-211121.docx) Reply LS on Latency of NR Positioning Protocols (R3-211121; contact: Ericsson) RAN3 LS in Rel-17 FS\_NR\_pos\_enh To:RAN2 Cc:SA2, RAN, RAN1

Ericsson think the three bullet points from the LS could be captured in our TR.

Intel think these points do not provide any value, and if we want to capture something it could only be a note. Ericsson would be OK to take them in a note.

* Noted (points can be included in the latency solutions TP)
* After further discussion, RAN2 understand that RAN1 can incorporate this material directly since they also received the LS.

### 8.11.2 Enhancements for commercial use cases

Scope and general discussion related to the RAN2 objective on enhancements to support high accuracy, low latency, network efficiency, and device efficiency for commercial use cases.

No documents should be submitted to 8.11.2. Please submit to 8.11.2.x.

#### 8.11.2.1 Latency analysis and latency enhancements

Including summary of [Post112-e][616][POS] TP for latency analysis results (Intel)

Including summary of [Post112-e][617][POS] Evaluation of latency enhancement solutions (CATT)

This agenda item will use a summary document (CATT).

Email discussion summaries

[R2-2100648](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100648%20Report%20of%20616%20E2E%20latency_V9%20Summary.docx) Report of [Post112-e][616][POS] TP for latency analysis results (Intel) Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh

Proposal 1:

- To capture the procedure, assumptions and evaluation results for rel-16 in clause 8.1.3 as “Higher layer latency analysis for Rel-16”

- To capture the evaluation results for enhancements if any in clause 8.2.3 as “Higher layer latency analysis for NR positioning enhancements”

o Note: This is related to email discussion [Post112-e][617][POS] Evaluation of latency enhancement solutions (CATT);

- To capture the summary for Rel-16 existing solutions from higher layer perspective in clause 8.4;

- To capture the recommendation from higher layer perspective in clause 10.8 for latency reduction;

Proposal 2: for DL-TDOA/DL AoD, only capture baseline results in the TR and use 88.5ms as minimum DL PRS measurement time based on conclusion in RAN1.

Proposal 3: for UL-TDOA/UL AoA, only capture baseline results in the TR and use 12ms as minimum SRS measurement time based on conclusion in RAN1.

Proposal 4: for Multi-RTT, only capture baseline results in the TR and use 88.5ms as minimum DL PRS measurement time and 12ms as minimum SRS measurement time based on conclusion in RAN1.

Proposal 5: for Downlink E-CID, only capture baseline results in the TR.

Proposal 6: for Uplink E-CID, only capture baseline results in the TR.

Proposal 7: For the latency analysis, stick to values endorsed in last RAN2 meeting although some companies in RAN3 have different view, considering RAN3 is unable to provide feedback before the completion of the SI.

Discussion:

Huawei think the main discussion was on what steps can be omitted and they are not sure why this is not reflected in the proposals. In respect of P7, they think RAN3 are still discussing and some of the RAN2 values are unrealistic.

Qualcomm think the proposals capture the current status of RAN2 work. They agree that the skipped steps could be captured as enhancements, but not as part of the baseline analysis. They consider that the main thing is to analyse comparative performance and absolute accuracy is not critical.

Intel did not include skipping steps because some companies were proposing enhancements for skipping parts of procedure, with different companies taking different approaches and no clear majority view. On the RAN3 situation, their understanding based on RAN3 chairman notes is that RAN3 will not be able to provide feedback this meeting, so we need to conclude without them.

Nokia agree with Qualcomm and Intel and think RAN3 should not hold up the work in RAN2.

Agreements:

- To capture the procedure, assumptions and evaluation results for rel-16 in clause 8.1.3 as “Higher layer latency analysis for Rel-16”

- To capture the evaluation results for enhancements if any in clause 8.2.3 as “Higher layer latency analysis for NR positioning enhancements”

o Note: This is related to email discussion [Post112-e][617][POS] Evaluation of latency enhancement solutions (CATT);

- To capture the summary for Rel-16 existing solutions from higher layer perspective in clause 8.4;

- To capture the recommendation from higher layer perspective in clause 10.8 for latency reduction;

for DL-TDOA/DL AoD, only capture baseline results in the TR and use 88.5ms as minimum DL PRS measurement time based on conclusion in RAN1.

for UL-TDOA/UL AoA, only capture baseline results in the TR and use 12ms as minimum SRS measurement time based on conclusion in RAN1.

for Multi-RTT, only capture baseline results in the TR and use 88.5ms as minimum DL PRS measurement time and 12ms as minimum SRS measurement time based on conclusion in RAN1.

for Downlink E-CID, only capture baseline results in the TR.

for Uplink E-CID, only capture baseline results in the TR.

For the latency analysis, stick to values endorsed in last RAN2 meeting although some companies in RAN3 have different view, considering RAN3 is unable to provide feedback before the completion of the SI. This does not preclude future changes to the values when RAN3 provide input (e.g. in WI phase).

[R2-2100653](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100653%20TP%20on%20latency%20reduction.docx) TP of [Post112-e][616][POS] TP for latency analysis results (Intel) Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh

Intel clarify this TP is in line with the proposals of the email discussion.

* Endorsed
* NOTE: After endorsement, an error was found and this document is revised in R2-2102094.

[R2-2102094](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102094%20TP%20on%20latency%20reduction.docx) TP of [Post112-e][616][POS] TP for latency analysis results (Intel) Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh

Discussed by email as part of discussion [AT113-e][600]

* Revised in R2-2102095

[R2-2102095](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102095%20TP%20on%20latency%20reduction.docx) TP of [Post112-e][616][POS] TP for latency analysis results (Intel) Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh

Discussed by email as part of discussion [AT113-e][600]

* Endorsed

[R2-2100407](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100407%20Summary%20of%20%5bPost112-e%5d%5b617%5d%5bPOS%5d%20Evaluation%20of%20latency%20enhancement%20solutions%20(CATT).docx) Summary of [Post112-e][617][POS] Evaluation of latency enhancement solutions (CATT) CATT discussion Rel-17 FS\_NR\_pos\_enh

Proposal 1: RAN2 to agree to confirm the TP below in TR:

• The details of the solutions are left for further discussion in normative work, which may include the following aspects:

o Latency reduction related to the measurement gap

Proposal 2: RAN2 to agree to capture the TP below in TR:

• The details of the solutions are left for further discussion in normative work, which may include the following aspects:

o Latency reduction related to the reporting and request of the measurements (e.g., via RRC signaling, MAC-CE and/or physical layer procedure, and/or priority rules, and/or CG-based)

Proposal 3: RAN2 to agree to capture the TP below in TR:

• The details of the solutions can be studied and specified, if needed, which may include the following aspects:

o Latency reduction related to the request and response of positioning assistance data (e.g., via RRC signaling, MAC-CE, Deferred MT-LR and/or physical layer procedure)

Proposal 4: RAN2 to agree to confirm the TP from RAN1 in TR:

• The following enhancements of signaling & procedures for reducing NR positioning latency can be studied and specified, if needed

o Latency reduction related to the reception of DL PRS (e.g., priority rules for the reception of DL PRS)

Proposal 5: RAN2 to agree latency reduction related to capability procedure aspect and further discussed in WI and capture the TP below in TR:

• The details of the solutions can be studied and SA2 will be involved in WI, which may include the following aspects:

* Latency reduction related to capability procedure.

Discussion:

CATT clarify that the TPs are based partly on RAN1 input.

Qualcomm think in P2, we have not provided any comment on the CG because it was not part of the original question; they think the CG solution is not clear and have not seen a contribution that clarifies it. They also understand that there was a clear majority (6-3) for the architecture proposal and think the summary does not fully reflect the comments provided. They see the proposals as basically repeating RAN1 conclusions with small text additions, and think the additions from RAN2 (CG and storing UE capabilities) do not have consensus.

Ericsson think there was no proposal on increased reporting in the summary, and this is different from what was discussed in RAN1 and should be reflected.

Apple have similar concerns to Qualcomm especially for P2; they do not see how an RRC signalling based measurement report can be used to replace LPP (except with local server in the RAN node, which has been ruled out in other discussion).

Huawei think from RAN2 point of view, we can analyse feasibility from RAN2 perspective of the solutions raised by RAN1. They are generally OK with the proposals although they agree they are not extremely specific.

Intel think the proposals are already recommended from RAN1 and should be agreeable, but RAN1 did not include them in the WI as objectives because RAN2 still have an action point on them. They understand that we can follow RAN1 recommendation at least for P1-P4, while P5 had a majority in the discussion. On the architecture point, they think most companies feel this should be discussed in SA2/RAN3.

Nokia think we have a list of enhancements in mind but have not done a full pros/cons analysis, and these proposals basically postpone the study to the WI phase. They think we need to either extend the SI or continue into the WI with some study objectives. On the architecture aspect, they agree with Qualcomm that there was a clear majority and think we could continue the study.

Lenovo could agree with P1-P4 based on RAN1 work, with details to be resolved in the WI phase. They also think the architecture enhancements should be studied and this should be somehow indicated from RAN2 perspective, perhaps triggering SA2 and RAN3 to look at it again.

CATT think the proposals are in line with the scope of the email discussion as it was assigned last meeting. On the architecture aspect, they think it is difficult to see a clear consensus, and the capability proposals they think are based on the contributions that were received and the views expressed, i.e. a majority of companies support the capability procedure aspect.

* [AT113-e][608][POS] Continue discussion of latency enhancements (CATT)

Scope: Discuss the proposals in R2-2100407 and R2-2101950 and converge to an agreeable TP. Additional latency enhancements from the previous email discussion can be captured if they have a clear consensus. Recommendations from RAN2 perspective should be clarified.

Intended outcome: Endorsable TP (+summary in R2-2102304); summary of extension in R2-2102117

Deadline: Tuesday 2021-02-02 1200 UTC – extended to Thursday 2021-02-04 0200 UTC to discuss whether to send an LS to SA2 in relation to P4 of R2-2102304, and determine if one of the TPs in P4 is agreeable.

[R2-2102304](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102304%20Report%20of%20%5bAT113-e%5d%5b608%5d%5bPOS%5d%20Continue%20discussion%20of%20latency%20enhancements.docx) (Summary of [608]) CATT discussion Rel-17 FS\_NR\_pos\_enh Late

Proposal 1: RAN2 to discuss and agree the text proposal #1 as below:

--------------------------------Text Proposal #1-----------------------------------------------------------------------------------

The following enhancements of signaling & procedures for reducing NR positioning latency are recommended for normative work, including DL and DL+UL positioning methods

 The details of the solutions are left for further discussion in normative work, which may include the following aspects:

 Latency reduction related to the measurement gap

 Latency reduction related to the reporting and request of the measurement (e.g., via RRC signaling, MAC-CE and/or physical layer procedure, and/or priority rules)

 Latency reduction related to measurements

 Latency reduction related to the reporting and request of positioning assistance data (e.g., via location scheduling in advance of the time of when the location is needed)

----------------------------End of Text Proposal #1-------------------------------------------------------------------------------

Proposal 2: RAN2 to discuss and agree the text proposal #2 as below:

--------------------------------Text Proposal #2-----------------------------------------------------------------------------------

The following enhancements of signaling & procedures for reducing NR positioning latency can be studied and specified, if needed

 Latency reduction related to the request and response of positioning assistance data (e.g., via RRC signaling, MAC-CE and/or physical layer procedure)

 Latency reduction related to the reception of DL PRS (e.g., priority rules for the reception of DL PRS)

 Latency reduction related to the reporting of the measurements (existing CG-based transmission)

----------------------------End of Text Proposal #2-------------------------------------------------------------------------------

Proposal 3: There is no majority to support the recommendation of existing CG-based, FFS on the recommended text proposal.

Proposal 4: RAN2 to discuss the text proposal #3 & #4 as below.

Option1: The following enhancements of signaling & procedures for reducing NR positioning latency are considered as beneficial:

--------------------------------Text Proposal #3-----------------------------------------------------------------------------------

The following enhancements of signaling & procedures for reducing NR positioning latency are recommended for normative work, including DL and DL+UL positioning methods

 The details of the solutions are left for further discussion in normative work, which may include the following aspects:

 Latency reduction related to the measurement gap

 Latency reduction related to the reporting and request of the measurement (e.g., via RRC signaling, MAC-CE and/or physical layer procedure, and/or priority rules)

 Latency reduction related to measurements

 The following enhancements of signaling & procedures for reducing NR positioning latency are considered as beneficial:

 Latency reduction related to storing UE capability in AMF procedure. It is proposed that SA2 should study whether this should be recommended for normative work in SA/CT.

----------------------------End of Text Proposal #3-------------------------------------------------------------------------------

Option2: The details of the solutions are left for further discussion in normative work, which may include the following aspects:

--------------------------------Text Proposal #4-----------------------------------------------------------------------------------

The following enhancements of signaling & procedures for reducing NR positioning latency are recommended for normative work, including DL and DL+UL positioning methods

 The details of the solutions are left for further discussion in normative work, which may include the following aspects:

 Latency reduction related to the measurement gap

 Latency reduction related to the reporting and request of the measurement (e.g., via RRC signaling, MAC-CE and/or physical layer procedure, and/or priority rules)

 Latency reduction related to measurements

 Latency reduction related to storing UE capability in AMF procedure.

 SA/CT will be involved during WI.

----------------------------End of Text Proposal #4-------------------------------------------------------------------------------

Proposal 5: There is no majority to support to capture the architecture enhancement aspect into TR. Disagree to capture the architecture enhancement aspect into TR.

Proposal 6: Disagree the broadcast delay optimization aspect as Rel-17 scope.

Proposal 7: Disagree the mechanisms for mitigating the effects of beam failure and NLOS effects as one of aspects of latency reduction.

Proposal 8: Disagree to capture the detail solutions from companies’ contributions for clause 8.2.

Discussion:

P1:

Nokia would like to see the TP with the context of where it goes in the TR. They also think it is a bit premature to recommend solutions for normative work. They think we need a study phase in the WI to continue on these solutions. Also concerned about the number of enhancements proposed for normative work.

CATT think only a few of these items were raised by RAN2, and all the RAN2 items are proposed to be captured in section 10.8. So this proposal just follows the guidance of RAN1, with the addition of the last bullet about assistance data.

Huawei think there should be no study phase and we just need to discuss the proposals.

Ericsson think if there are outstanding questions and not everything has been settled, a study item would be needed. They also think the TP is clearer in its entirety than broken into individual proposals.

Intel observe the plenary do not like study phases in WIs, and think as commented by CATT, most of these items are from RAN1 recommendations. They suggest we delete the parts proposed by RAN1 and rely on RAN1 to capture those, and conclude here on the RAN2-centric parts.

Qualcomm agree we should not have a study activity in the WI phase, but they also think we have not really studied many of the items described here, e.g. storing UE capability has not been really discussed although it is identified in the TP. They think we should not give the impression that we have studied things we haven’t studied. So they think “study, and if agreed, specify” will be necessary in the WID.

Apple note that the RAN1 recommendations include some RAN2 aspects (e.g. RRC signalling) that we have not had a chance to study, and they are uneasy about giving a blank check to normative work in these directions. So they think some more study will be needed.

ZTE agree with Huawei and prefer to discuss proposal by proposal. They support P1.

CATT think most companies agreed to recommend P1 and we should be able to agree to it to make progress.

Ericsson are OK with P1.

Nokia appreciate that there is a mix of RAN1 and RAN2 text in this proposal, but for the RAN2 parts (i.e. the last bullet), they would like to put them under the P2 category (“study, and specify if agreed”). Lenovo agree.

Intel understand that only the last bullet is different from the RAN1 recommendations, and are OK with P1 as it is.

vivo agree with P1 and think we need to make progress.

Nokia have a concern that the assistance data enhancements alone may not bring down the latency for commercial use cases, but they can accept the majority view on P1.

P2:

Intel understand that the first and second bullets were already recommended for study by RAN1, so only the third bullet is a new proposal. They think the proposal is OK.

CATT indicate this proposal had majority support, but there is no consensus on the last bullet.

ZTE ask for clarification about the CG-based transmission. They understand it means the existing mechanism can be used with no modification, and in this case they support it as it has minimal spec impact. CATT clarify there would be NRPPa impact to support this but no impact to the CG mechanism on Uu.

vivo prefer to delete “existing” or add “e.g.”, to avoid locking ourselves into the assumption that nothing can be modified.

Qualcomm also think we should have an “e.g.” on the CG-based parenthetical, and they question whether adding NRPPa signalling will really benefit latency.

Huawei think there would be modifications to the CG-based transmission from the configuration perspective. They find this enhancement beneficial.

Nokia prefer that we not limit to “existing” CG-based transmission.

Lenovo wonder if we would have an indication of which bullets are recommended by RAN2. CATT think if we follow the RAN1 recommendations, the bullet on CG-based transmission would be recommended for normative work. Nokia would not be OK with this.

ZTE can accept the majority view on “e.g., CG-based transmission”, and think the NRPPa issues should be handled by RAN3.

Intel think we should not move items between the “normative work” and “studied and specified” parts. They think we should indicate clearly which bullets are RAN2 recommendations.

P4:

CATT think this is just a wording issue.

Huawei think there is no normative work for RAN in the AMF storing the UE capability; what we can do as a RAN2 conclusion is send an LS to SA2, and let them determine if this enhancement is effective. They see that no recommendation is needed.

Nokia consider that this enhancement moves latency from LPP to CN signalling and has potential NRPPa impacts. They think it falls in the same category as the architecture enhancement and needs to be studied by SA2 first, and certainly should not be recommended for normative work now.

Lenovo agree with Huawei and Nokia and think this would be a recommendation on behalf of other WGs.

Intel think the reason we have the capability solution is that it is related to latency reduction, so the work must be triggered by RAN2; if companies see some benefit, we could send an LS to SA2. They agree there is no RAN2 work.

Qualcomm think companies can bring it to SA2 under the existing location work.

ZTE agree with other companies that we may need to send an LS to SA2 before discussing the issue in RAN2, to avoid any potential conflict. CATT also support an LS to SA2.

Nokia think it does not make sense to send an LS to SA2 since we are not going to take any decisions based on it. They think it resembles the architecture enhancements issue, and agree with Qualcomm that it can be raised by contributions in SA2.

Ericsson think we have spent a lot of time on this and we should let SA2 know; they disagree with Nokia’s analogy to architecture enhancements, because this has not been discussed widely in the different groups. They think we can raise some questions for SA2 and give our understanding based on the discussion to this point. Further, they think there could be RAN2 impact in how we structure the capabilities.

Chair asks if there is a reason it cannot be raised by contributions in SA2. Ericsson think RAN2 has additional information on latency. CATT think a majority of companies agreed to recommend this and we should capture that agreement; just sending an LS would be a step backward.

Nokia find Ericsson’s comment not convincing; they think we could have sent the LS earlier if we had done more study of this solution, but given the lack of time they think it should be driven from contributions to SA2.

Qualcomm think we have not done an analysis of the capability impact on latency; they do not see a latency enhancement since the LPP request capabilities message is still needed.

Agreements:

The following TPs are endorsed, with an indication of which items originate from RAN2:

--------------------------------Text Proposal #1-----------------------------------------------------------------------------------

The following enhancements of signaling & procedures for reducing NR positioning latency are recommended for normative work, including DL and DL+UL positioning methods

 The details of the solutions are left for further discussion in normative work, which may include the following aspects:

 Latency reduction related to the measurement gap

 Latency reduction related to the reporting and request of the measurement (e.g., via RRC signaling, MAC-CE and/or physical layer procedure, and/or priority rules)

 Latency reduction related to measurements

 Latency reduction related to the reporting and request of positioning assistance data (e.g., via location scheduling in advance of the time of when the location is needed)

----------------------------End of Text Proposal #1--------------------------------------------------------------------------

--------------------------------Text Proposal #2-----------------------------------------------------------------------------------

The following enhancements of signaling & procedures for reducing NR positioning latency can be studied and specified, if needed

 Latency reduction related to the request and response of positioning assistance data (e.g., via RRC signaling, MAC-CE and/or physical layer procedure)

 Latency reduction related to the reception of DL PRS (e.g., priority rules for the reception of DL PRS)

 Latency reduction related to the reporting of the measurements (e.g., CG-based transmission)

----------------------------End of Text Proposal #2--------------------------------------------------------------------------

[R2-2102305](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102305%20Text%20proposals%20of%20latency%20enhancement.docx) (TP from [608]) CATT discussion Rel-17 FS\_NR\_pos\_enh

* Revised in R2-2102120

[R2-2102117](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102117%20Report%20of%20%5bAT113-e%5d%5b608%5d%5bPOS%5dContinue%20discussion%20of%20latency%20enhancements.docx) (Summary of extension of [608]) CATT discussion Rel-17 FS\_NR\_pos\_enh Late

CATT clarify we can go to the text proposal directly.

* Noted

[R2-2102120](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102120%20Text%20proposals%20of%20latency%20enhancement.docx) (TP from [608]) CATT discussion Rel-17 FS\_NR\_pos\_enh

Qualcomm wonder what is the intention of adding the line in section 7 about storing UE capability. They are OK with the addition to section 10. CATT understand that section 7 is a list of the topics we studied. Qualcomm think it is not comprehensive, and if we are listing everything we studied we should include e.g. the architecture aspects.

Nokia agree with Qualcomm, and are also a bit confused as they understood that the second phase of the discussion found no majority to add anything to the TP.

CATT indicate that six companies supported the TP in this form and four supported the original TP where the capability would have been indicated to be specified.

Nokia understood the reason to discuss whether to send an LS to SA2 was that there was no clear consensus on whether to recommend the capability enhancements for study or normative work, and since there was no agreement to send the LS, it seems strange if we are now saying RAN2 will do it by itself.

Intel can agree to remove the change to section 7, and understand that the change to section 10 indicates RAN2 will study further, and send an LS to SA2 later if we have consensus.

ZTE agree with Intel, and think there is a concern if we spend a lot of time on the study and then SA2 find a problem; so they would prefer to send the LS now.

Huawei prefer not to send an LS and agree with Intel. They think this can be contribution-driven in both groups.

Chair suggests we endorse the TP with the removal of the change to section 7.

TP endorsed with the removal of the change in section 7.

* Revised in R2-2102124

R2-2102124 (TP from [608]) CATT discussion Rel-17 FS\_NR\_pos\_enh

* Endorsed

Summary document

[R2-2101950](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101950%20Summary%20of%20AI%208.11.2.1%20Latency%20analysis%20and%20latency%20enhancements.docx) Summary of AI 8.11.2.1 Latency analysis and latency enhancements CATT discussion Rel-17 FS\_NR\_pos\_enh Late

RAN2 centric topic:

Proposal 1: RAN2 to discuss whether broadcast delay optimization aspect should be a part of latency reduction.

Related RAN1 topic:

Proposal 2: RAN2 to discuss mechanisms for mitigating the effects of beam failure and NLOS effects as one of aspects of latency reduction.

The following documents will not be treated individually

[R2-2100373](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100373%20(R17%20NR%20POS%20A81121).doc) Discussion on Enhancements for Latency Reduction InterDigital, Inc. discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100683](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100683%20Discussion%20on%20A-PRS%20and%20semi-persistent%20PRS.docx) Discussion on A-PRS and semi-persistent PRS vivo discussion FS\_NR\_pos\_enh

[R2-2100685](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100685%20Discussion%20on%20latency%20enhancement%20for%20R17%20positioning.docx) Discussion on latency enhancement for R17 positioning vivo discussion FS\_NR\_pos\_enh

[R2-2100814](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100814%20Positioning%20enhancements%20on%20latency%20reduction.doc) Positioning enhancements on latency reduction Xiaomi discussion

[R2-2100869](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100869%20DIscussion%20on%20NR%20Positioning%20latency%20reduction.doc) Discussion on latency reduction for NR positioning enhancements Apple discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100933](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100933_PosLatencyReduction_LenMM.docx) On Positioning Latency Reduction Solutions Lenovo, Motorola Mobility discussion Rel-17

[R2-2101227](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101227%20Discussion%20on%20positioning%20latency.docx) Discussion on positioning latency Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

[R2-2101392](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101392%20Discussion%20on%20Latency%20Aspects.docx) Discussion on Latency Aspects Ericsson discussion Rel-17

[R2-2101469](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101469_(latency%20enhancements).docx) Positioning Latency Reduction Qualcomm Incorporated discussion

[R2-2101870](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101870%20Latency%20discussions.docx) Discussion on latency reduction solutions Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_pos\_enh

[R2-2101906](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101906%20(8.11.2.1)%20latency%20reduction%20on%20measurement%20reporting%20via%20configured%20grant%20for%20positioning%20%20.docx) Latency reduction via configured grant for positioning Samsung R&D Institute UK discussion

[R2-2101907](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101907%20(8.11.2.1)%20latency%20reduction%20via%20measurement%20gap%20signaling%20optimization%20v1.docx) Latency reduction via measurement gap signalling optimization Samsung R&D Institute UK discussion

[R2-2101921](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101921_positioning_discussion_on_local_LMF.docx) Discussion on local LMF ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_pos\_enh

[R2-2101922](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101922_positioning_latency_reduction.docx) Discussion on latency reduction of NR positioning ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_pos\_enh

[R2-2101923](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101923_positioning_latency_reduction_MO_LR_request_with_measurement_report.docx) Discussion on latency reduction of MO-LR ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_pos\_enh

#### 8.11.2.2 Accuracy and efficiency enhancements

Including summary of [Post112-e][608][POS] Support of on-demand PRS (Ericsson)

Including summary of [Post112-e][609][POS] Positioning support in RRC\_IDLE/RRC\_INACTIVE (Huawei)

This agenda item will use a summary document (Intel).

Email discussion summaries

[R2-2101230](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101230%20%5bPost112-e%5d%5b609%5d%5bPOS%5d%20Positioning%20support%20in%20RRC_IDLE%20and%20INACTIVE%20(Huawei).docx) [Post112-e][609][POS] Positioning support in RRC\_IDLE and INACTIVE (Huawei) Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

Easy Agreement

Scope of IDLE/INACTIVE positioning

Proposal 1: The following UE positioning procedures are under the scope of RRC\_IDLE/INACTIVE positioning if any of them are performed when the UE is in RRC\_IDLE/INACTIVE. (13/14)

 Service layer support

 LCS messages defined in Clause 4.1.2 for location services in TS 24.571

 LPP signaling for positioning (e.g., Capability transfer, Assistance data transfer, Location information transfer)

 NRPPa

 E-CID information transfer (UE-associated)

 Positioning information transfer (UE-associated)

 Measurement information transfer (non-UE-associated)

 Uu Signaling and procedure

 RRC signaling for positioning (e.g., posSRS configuration)

 MAC procedure/L1 signalling (e.g., activation/deactivation for semi-persistent/aperiodic posSRS)

 Transmission of posSRS and reception of DL-PRS

 Reception for assistance information broadcast

Downlink Positioning

Proposal6: RequestCapabilities/ProvideCapbilities for PRS cannot be sent in RRC\_IDLE/INACTIVE (0/14, 3/13, 0/14, 2/14)

Proposal7: RequestAssistanceData for DL-PRS cannot be sent for UE in RRC\_IDLE/INACTIVE. (0/14, 3/14)

Proposal8: Current stage3 spec has already supported assistance data delivery for DL positioning during RRC\_CONNECTED and on-demand SI request in RRC\_IDLE/ INACITVE for IDLE/INACTIVE positioning. (14/14)

Proposal9: DL-PRS configuration delivery to the UE in RRC\_IDLE/INACTIVE is not supported. (0/14, 2/11)

Proposal10: Current stage3 spec already supports the transfer of RequestLocationInformation in RRC\_CONNECTED for PRS measurement in IDLE/INACTIVE. (14/14)

Proposal11: Transfer of RequestLocationInformation when the UE is in RRC\_IDLE/INACTIVE is not supported (0/14, 2/11)

Proposal12: The report of PRS measurement performed in RRC\_IDLE/INACTIVE when the UE is in RRC\_INACTIVE is supported, not supported when the UE is in IDLE. (0/13, 10/12)

Proposal13: The report of PRS measurement performed in RRC\_IDLE/INACTIVE when the UE is in RRC\_CONNECTED is supported. (14/14)

RAT-Independent Positioning

Proposal22: Support RAT-Independent positioning in RRC\_IDLE/INACTIVE. FFS the procedures that can be supported. (13/14)

Discussion:

Ericsson think this analysis may be too detailed for the SI phase. Huawei think the objective of the email discussion was to determine what could be supported and the proposals are in line with that.

CATT agree with Ericsson that the proposals are too detailed and should be prioritised. They also think we should discuss the SDT aspect.

Ericsson have a big concern with the use of SDT. For early data CP transmission they understand that it does not have integrity protection. They see that there would be SA2 impact to support CP over SDT. Huawei think these arguments are not valid, because NAS has its own security mechanisms and there is no issue for the lower layer, and while the current SDT WID has no CP solution, they understand that the revision to support it is very minor. Ericsson understand that integrity was an issue for data over NAS in the NB-IoT WI.

vivo support the easy proposals listed above and think P12 can be taken without assuming SDT.

* [AT113-e][609][POS] Continued discussion of positioning in idle/inactive (Huawei)

Scope: Continue discussion of the issues from R2-2101230, and converge to an agreeable TP, taking as a baseline the principle that positioning in inactive is supported as recommended by RAN1. R2-2101229 to be taken into account.

Intended outcome: Endorsable TP, in R2-2102100; revised TP in R2-2102121

Deadline: Tuesday 2021-02-02 1200UTC – extended to 2021-02-04 0200 UTC to finalise the TP

To further discuss

MO-LR/Location services

Proposal2: RAN2 should discuss whether MO-LR request in INACTIVE should be supported by the UE in RRC\_INACTIVE. (6/11)

Proposal3: MO-LR response for MO-LR response in RRC\_IDLE/INACTIVE is not supported. (0/11&4/11)

E-CID positioning

Proposal4: Reporting of RRM measurement performed in RRC\_INACTIVE in LPP should be supported by the UE in RRC\_INACTIVE. (9/14)

Proposal5: RAN2 should discuss whether UE can report the RRM measurement performed in RRC\_INACTIVE to the network in RRC message for UL E-CID. UL E-CID procedure has already been supported by NRPPa for the UE in RRC\_INACTIVE. (7/14)

Uplink Positioning

Proposal14: Reporting of SRS capability for UE in INACTIVE is not supported. (4/11)

Proposal15: Delivery of SRS configuration for UE SRS transmission in INACTIVE when the UE is in CONNECTED if SRS transmission is supported in RRC\_INACTIVE. (9/13)

Proposal16: Delivery of SRS configuration for UE SRS transmission when the UE is in INACTIVE is not supported if SRS transmission is supported in RRC\_INACTIVE. (4/12)

Proposal17: RAN2 should discuss whether the current stage3 spec already supports the NRPPa message for uplink positioning for UE in RRC\_INACTIVE. (6/12)

General NAS/NG-AP transport

Proposal18: The transport of UL NAS message in INACTIVE is supported for INACTIVE positioning. (7/9)

Proposal19: The transport of DL NAS message in IDLE/INACTIVE for IDLE/INACTIVE positioning is not supported. (5/13)

Proposal20: Transport of UE-associated NRPPa message in RRC\_INACTIVE for RRC\_INACTIVE positioning has already been supported. This should be further verified by RAN3. (8/14)

Proposal21: RAN2 doesn’t need to discuss the transport of non-UE-associated NRPPa message in IDLE/INACTIVE for IDLE/INACTIVE positioning (14/14)

[R2-2102336](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102336%20%5b609%5d%5bPOS%5d%20Continued%20discussion%20of%20positioning%20in%20idleinactive%20(Huawei).docx) (Summary of [609]) Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

Easy Agreements:

Proposal 1a: RAN2 confirms on the following recommendation of TSG RAN (17/17)

 Positioning in RRC\_INACTIVE

 DL, UL and DL+UL positioning methods

 UE-based and UE-assisted positioning solutions

 Support of UE positioning measurements for UEs in RRC\_INACTIVE state

 Options that can be considered include DL-PRS or DL-PRS and SSB

 Support of gNB positioning measurements for UEs in RRC\_INACTIVE state

Proposal 1b: RAN2 confirms on the following (17/17)

 Positioning in RRC\_IDLE

 It is feasible for a UE to perform DL positioning measurement in RRC\_IDLE state

 It is up to RAN2 to decide whether to support the enhancements of NR positioning reporting of DL positioning measurements and/or positioning estimates for RRC\_IDLE UEs.

Proposal2: RAN2 recommends the following for normative work for DL positioning

 The report of PRS measurement performed in RRC\_IDLE/INACTIVE when the UE is in RRC\_INACTIVE is supported (10/12)

 PRS measurement report and/or location estimate are sent from the UE to the gNB in RRC\_INACTIVE, by enhancing small data transmission in RRC\_INACTIVE (15/16)

Proposal3: For DL positioning in IDLE/INACTIVE, the followings are not supported:

 RequestCapabilities/ProvideCapbilities for PRS cannot be sent in RRC\_IDLE/INACTIVE (0/14, 3/13, 0/14, 2/14)

 RequestAssistanceData for DL-PRS cannot be sent for UE in RRC\_IDLE/INACTIVE. (0/14, 3/14)

 DL-PRS configuration delivery to the UE in RRC\_IDLE/INACTIVE is not supported. (0/14, 2/11)

 The report of PRS measurement performed in RRC\_IDLE/INACTIVE is not supported when the UE is in IDLE. (0/13).

 Transfer of RequestLocationInformation when the UE is in RRC\_IDLE/INACTIVE is not supported (0/14, 2/11)

Proposal4: For DL positioning in IDLE/INACTIVE, the followings are already supported for the current spec and can be reused:

 Current stage3 spec has already supported assistance data delivery for DL positioning during RRC\_CONNECTED and on-demand SI request in RRC\_IDLE/ INACITVE for IDLE/INACTIVE positioning. (14/14)

 Current stage3 spec already supports the transfer of RequestLocationInformation in RRC\_CONNECTED for PRS measurement in IDLE/INACTIVE. (14/14)

Proposal5: Support RAT-Independent positioning in RRC\_IDLE/INACTIVE. FFS the procedures that can be supported. (13/14)

Proposal6: RAN2 confirm on the following

 The current LPP spec can already support sending RRM measurement performed IDLE/INACTIVE in RRC\_CONNECTED; (16/16)

 The current RRC spec can already support sending RRM measurement performed in IDLE/INACTIVE in CONNECTED (14/16)

For further discussion during online

Proposal7: Reporting of RRM measurement performed in RRC\_INACTIVE in LPP should be supported by the UE in RRC\_INACTIVE. (9/14)

Proposal8: RAN2 should discuss whether UE can report the RRM measurement performed in RRC\_INACTIVE to the network in RRC message for UL E-CID. UL E-CID procedure has already been supported by NRPPa for the UE in RRC\_INACTIVE. (7/14)

Proposal9: If SRS transmission is supported in RRC\_INACTIVE, RAN2 to discuss on the following:

 Reporting of SRS capability for UE in INACTIVE is not supported. (4/11)

 Delivery of SRS configuration for UE SRS transmission in INACTIVE when the UE is in CONNECTED. (9/13)

 Delivery of SRS configuration for UE SRS transmission when the UE is in INACTIVE is not supported. (4/12)

 The current stage3 spec already supports the NRPPa message for uplink positioning for UE in RRC\_INACTIVE. (6/12)

Should be further studied during the WI phase

Proposal10: RAN2 confirm that the following should be further studied during the WI phase:

 SDT can provide general transport for uplink LCS message. What LCS message can be supported can be further discussed during the WI phase

 Whether to support the solicited and un-solicited DL LCS message in RRC\_INACTIVE.

 The general support of transport for UL/DL NAS message for positioning in RRC\_INACTIVE

RAN3-related aspects

Proposal11: Transport of UE-associated NRPPa message in RRC\_INACTIVE for RRC\_INACTIVE positioning has already been supported. This should be further verified by RAN3. (8/14)

Proposal12: RAN2 doesn’t need to discuss the transport of non-UE-associated NRPPa message in IDLE/INACTIVE for IDLE/INACTIVE positioning (14/14)

Discussion:

P1-P6:

Ericsson think the involvement of SDT (P2) is a concern, because the messages are large. They are also concerned about battery impact and security protection of the transmission. So they think that the use of SDT should be a “study” objective.

Qualcomm are OK with the easy proposals, except that they think P3 is not needed as it says what is not supported.

ZTE have concerns about 1a and 1b, and would prefer to down-prioritise support of UL methods in RRC\_INACTIVE. They understand that RAN1 do not necessarily recommend that RAN2 support all positioning methods in RRC\_INACTIVE, but intended to leave the door open for RAN2 to determine which methods should be supported.

InterDigital are OK with P2 and think it should be recommended for normative work for the DL positioning; they do not see that the positioning session can do further study, and think Ericsson’s concerns relate to the general SDT framework rather than the positioning aspects. They think we could proceed with the TP as it is.

Intel also support P1a/P1b/P2, and regarding the Ericsson concerns on SDT they understand that there is not a size limitation in current discussion and data transmitted via SDT will be security-protected. They also agree with Qualcomm that P3 is not needed.

Huawei indicate that P7-P8 should not have been in the “easy agreements” section. They also indicate that P3 is not in the TP.

Samsung think the SDT mechanism is a potential candidate solution that can be further investigated in the WI phase, but they understand that support for CP transmission with SDT needs to be confirmed by RAN plenary. So they have some concern about the methods progressing in parallel.

Ericsson agree with ZTE that down-prioritisation is needed. They see DL positioning as less problematic than UL and are not sure how UL-SRS in RRC\_INACTIVE will work.

Nokia are in principle OK with all the easy agreements (they agree we don’t need P3). They also think the TP should not indicate the things that are already supported. They think some wording adjustments are needed.

Chair suggests that SDT could be recommended as a “study” objective, and wonders if companies would be OK with that. Qualcomm think this would be OK if this is the only way to move forward.

Qualcomm point out that RAN1 agreed to consider UL positioning for RRC\_INACTIVE, and in the TP it is clear that the related support is only specified if UL is agreed in RAN1. So they see no need to prioritise. They also think the signalling has been proposed and we can conclude there is no showstopper in supporting the procedures.

ZTE think it is going to be hard to solve the issues to support all positioning methods and idle as well as inactive. For P2, they would be OK with the use of SDT.

Ericsson think SDT should be an example.

Agreements:

Proposal 1a: RAN2 confirms on the following recommendation of TSG RAN (17/17)

 Positioning in RRC\_INACTIVE

 DL, UL and DL+UL positioning methods

 UE-based and UE-assisted positioning solutions

 Support of UE positioning measurements for UEs in RRC\_INACTIVE state

 Options that can be considered include DL-PRS or DL-PRS and SSB

 Support of gNB positioning measurements for UEs in RRC\_INACTIVE state

Proposal 1b: RAN2 confirms on the following (17/17)

 Positioning in RRC\_IDLE

 It is feasible for a UE to perform DL positioning measurement in RRC\_IDLE state

 It is up to RAN2 to decide whether to support the enhancements of NR positioning reporting of DL positioning measurements and/or positioning estimates for RRC\_IDLE UEs.

Proposal2: RAN2 recommends the following for normative work for DL positioning

 The report of PRS measurement performed in RRC\_IDLE/INACTIVE when the UE is in RRC\_INACTIVE is supported (10/12)

 PRS measurement report and/or location estimate are sent from the UE to the gNB in RRC\_INACTIVE. RAN2 generally agree to do this by enhancing small data transmission in RRC\_INACTIVE (details of the use of SDT to be studied in the WI phase) (15/16)

Proposal4: For DL positioning in IDLE/INACTIVE, the followings are already supported for the current spec and can be reused:

 Current stage3 spec has already supported assistance data delivery for DL positioning during RRC\_CONNECTED and on-demand SI request in RRC\_IDLE/ INACITVE for IDLE/INACTIVE positioning. (14/14)

 Current stage3 spec already supports the transfer of RequestLocationInformation in RRC\_CONNECTED for PRS measurement in IDLE/INACTIVE. (14/14)

Proposal5: Support RAT-Independent positioning in RRC\_IDLE/INACTIVE. FFS the procedures that can be supported. (13/14)

R2-2102431 (Summary of extension of [609]) Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

* Noted

[R2-2102100](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102100%20TP%20for%20IDLE%20and%20INACTIVE%20postioning.docx) (TP from [609]) Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

Huawei clarify this comprises material that has been drafted previously together with the easy agreements from the summary.

Ericsson think some discussion is needed.

* Revised in R2-2102121

[R2-2102121](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102121%20TP%20for%20IDLE%20and%20INACTIVE%20postioning.docx) (TP from [609]) Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

Huawei indicate there was a last-minute comment on the removal of idle mode measurements from reporting in inactive mode, and the addition of reporting of idle mode measurements in RRC\_INACTIVE. This has been implemented in the TP.

InterDigital have a comment on the use of SDT; they would prefer to remove this text since they understand that the SDT aspects are to be discussed during the normative phase, and they would rather say that the use of SDT is to be discussed (rather than “studied”) during the WI phase.

Ericsson think there has not been thorough analysis of the use of SDT and whether it will help in terms of latency or power saving. They think we could discuss by email towards the plenary, but do not see a need for using SDT. They can accept that we study it further but would not be OK to change to “discussed”.

Huawei think the situation has changed a bit since the last session, because the SDT session made a working assumption on the transmission of positioning measurements in inactive mode, so there is now consensus to support SDT in inactive mode for positioning. So they agree with the comment from InterDigital. They also think that measurements taken in connected mode should be possible to report in inactive mode, to avoid coupling the measurement and the reporting.

Apple have the same understanding as InterDigital and Huawei on SDT, and regarding the reporting in inactive of measurements from connected, they need some more time to consider and wonder why these measurements would not be reported in connected. Huawei clarify the UE may be transferred to inactive mode by the network before the reporting happens, but if the criterion for reporting is met, it should still be possible to report.

Intel think we do not need additional effort to enable the reporting in inactive. Huawei agree. Apple could accept it with this understanding.

Ericsson wonder if we need to agree to this now if the impact is that low; they would also like some time to consider it as a new proposal.

Qualcomm think it is safer if we take the TP and go ahead rather than having a detailed discussion now. If we open the discussion now we risk having no TP.

Nokia agree with Qualcomm and think we can look into these scenarios in the WI phase.

ZTE agree with Intel and Huawei that if there is no new effort to support the reporting it would be OK; and they agree that SDT can be discussed in WI phase.

Ericsson think we should not fine-tune the TP now.

* Endorsed

[R2-2101229](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101229%20TP%20for%20IDLE%20and%20INACTIVE%20postiioning.docx) TP for IDLE and INACTIVE postiioning Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

[R2-2101389](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101389%20Email%20Disc%20on-demand%20PRS.docx) Report on [Post112-e][608][POS] Support of on-demand PRS Ericsson report Rel-17

Proposal 1 RAN2 to capture in TR that RAN2 see benefits of “On demand PRS” Functionality.

Proposal 2 RAN2 to provide recommendation for UE-initiated “on demand Request” during active LPP session

Proposal 3 RAN2 to provide recommendation for LMF Initiated on Demand request in order to be able to dynamically vary the PRS configuration and also for recommending turning on/off beams.

Proposal 4 RAN2 during WI phase decides or takes assistance from RAN1 to identify which DL-PRS configuration parameters can be dynamically changed.

Proposal 5 For existing NR architecture, gNB based dynamic PRS configuration is not supported.

Proposal 6 RAN2 during WI phase identifies ways for the LMF to be able to obtain measurement results from UE operating in UE based mode in order to support LMF-initiated on demand PRS.

* [AT113-e][610][POS] Continue discussion of on-demand PRS (Ericsson)

Scope: Continue the discussion of R2-2101389 and converge to an agreeable TP.

Intended outcome: Endorsable TP, in R2-2102096 (+summary in R2-2102369)

Deadline: Tuesday 2021-02-02 1200 UTC

[R2-2102096](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102096.docx) (TP from [610]) Ericsson report Rel-17

InterDigital are OK with the TP.

* Endorsed

[R2-2102369](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2102369.docx) (Summary of [610]) Ericsson report Rel-17

* Noted without presentation

Summary document

[R2-2101545](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101545%20Summary%20for%20AI%208.11.2.2%20.docx) Summary for AI 8.11.2.2 on the accuracy and efficiency enhancements Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh Late

List of potentially agreeable proposals:

Proposal 1:Leave the decision on the support of on-demand SRS for UL based positioning to RAN1.

Proposal 2: Leave the decision on the enhancements of information reporting from UE and gNB for multipath/NLOS mitigation to RAN1 and RAN plenary.

Proposal 6: Leave the decision on interference mitigation to RAN1.

List of proposals for further discussions:

Proposal 3: RAN2 to discuss whether Allow a deployment to specify which positioning mode the UE may operate in via broadcast.

Proposal 4: for INACTIVE UE, UL CP signalling is transmitted via extension of SDT if RAN2 agree to support the UL signalling transmission in INACTIVE based on email discussion 609;

Proposal 5: RAN2 to discuss whether to support “different service level in which each level represents both positioning accuracy and latency”;

The following documents will not be treated individually

[R2-2100107](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100107%20-%20Discussion%20on%20on-demand%20DL-PRS.doc) Discussion on on-demand DL-PRS OPPO discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100108](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100108%20-%20Positioning%20in%20RRC_IDLE%20and%20RRC_INACTIVE%20state.docx) Positioning in RRC\_IDLE and RRC\_INACTIVE state OPPO discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100374](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100374%20(R17%20NR%20POS%20A81122).doc) Discussion on Positioning in RRC Idle/Inactive mode InterDigital, Inc. discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100375](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100375%20(R17%20NR%20POS%20A81122).doc) Discussion on On-demand reference signals for positioning InterDigital, Inc. discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100408](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100408%20Further%20Consideration%20on%20on-demand%20PRS.docx) Further considerations on on-demand PRS CATT discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100409](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100409%20Further%20considerations%20on%20positioning%20in%20RRC_IDLERRC_INACTIVE.doc) Further considerations on positioning in RRC\_IDLE/RRC\_INACTIVE CATT discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100650](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100650%20Support%20of%20positioning%20in%20idle&inactive%20mode.docx) Support of positioning in idle/inactive mode Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh R2-2009002

[R2-2100651](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100651%20Support%20of%20on%20demand%20PRS.docx) Support of on demand PRS Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100673](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100673%20Discussion%20on%20positioning%20support%20in%20RRC_IDLE%20and%20INACTIVE.docx) Discussion on positioning support in RRC\_IDLE and INACTIVE Spreadtrum Communications discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100813](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100813%20Discussion%20on%20PRS%20enhancements.doc) Discussion on PRS enhancements Xiaomi discussion

[R2-2100815](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100815%20Positioning%20enhancements%20on%20RRC%20idle%20inactive%20UE.doc) Positioning enhancements on RRC idle inactive UE Xiaomi discussion

[R2-2100866](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100866%20DIscussion%20on%20NR%20Positioning%20accuracy%20enhancements%20.doc) Discussion on positioning accuracy and efficiency enhancements Apple discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100934](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100934_Inactive_Idle_Positioning_LenMM.docx) Positioning in RRC\_INACTIVE and RRC\_IDLE state Lenovo, Motorola Mobility discussion Rel-17

[R2-2100935](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100935_On-DemandPRS_LenMM.docx) On-Demand PRS Support Lenovo, Motorola Mobility discussion Rel-17

[R2-2101225](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101225%20Discussion%20on%20IDLE%20and%20INACTIVE%20positioning.docx) Discussion on IDLE and INACTIVE positioning Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

[R2-2101226](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101226%20Discussion%20on-demand%20PRS.docx) Discussion on-demand PRS Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

[R2-2101393](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101393%20on%20SDT,%20UL%20Positioning%20and%20On%20Demand%20PRS%20aspects.docx) SDT, UL Positioning and On Demand PRS Aspects Ericsson discussion Rel-17

[R2-2101470](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101470_(Inactive%20Mode%20Positioning).docx) Positioning of UEs in RRC Idle/Inactive State Qualcomm Incorporated discussion

[R2-2101471](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101471_(On-Demand%20PRS).docx) On-Demand PRS Qualcomm Incorporated discussion

[R2-2101868](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101868%20On-demand%20PRS%20suspension.docx) Enhancements on on-demand PRS transmissions Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_pos\_enh

[R2-2101908](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101908%20(8.11.2.2%20)%20support%20of%20positioning%20in%20idle%20inactive%20mode%20UE.docx) support of positioning in idle/inactive mode UE Samsung R&D Institute UK discussion

[R2-2101909](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101909%20(8.11.2.2)%20consideration%20of%20on-demand%20PRS%20for%20POS_v1.docx) Support of on-demand PRS Samsung R&D Institute UK discussion

[R2-2101920](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101920_positioning_discussion_on_idle_inactive_mode_positioning.docx) Discussion on IDLE/INACTIVE mode positioning ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100916](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100916_Pos_Tech_1.0.docx) Considerations on potential positioning enhancements Sony discussion Rel-17 FS\_NR\_pos\_enh R2-2009897

[R2-2100684](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100684%20Discussion%20on%20positioning%20support%20in%20RRC_IDLE%20and%20RRC_INACTIVE%20states.docx) Discussion on positioning support in RRC\_IDLE and RRC\_INACTIVE states vivo discussion FS\_NR\_pos\_enh

### 8.11.3 Integrity and reliability of assistance data and position information

#### 8.11.3.1 General contributions

Including contributions on TP updating, and any remaining issues for KPIs, use cases, and error sources/threat models.

Including summary of [Post112-e][618][POS] Finalise integrity text proposals (Swift)

Email discussion summary

[R2-2100596](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Docs\R2-2100596.zip) [Post112-e][618][POS] Finalise integrity text proposals Swift Navigation discussion

* [AT113-e][601][POS] Integrity text proposal (Swift)

Scope: Continue discussion of the remaining open issues on integrity, taking into account contributions to agenda items 8.11.3.1 and 8.11.3.2, and develop an agreeable text proposal

Intended outcome: Updated TP, in R2-2102092

Deadline: Tuesday 2021-02-02 1200 UTC

[R2-2102092](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\%5bFINAL%5d%20R2-2102092%20%5bAT113-e%5d%5b601%5d%20Integrity%20TP.docx) [AT113-e][601][POS] – Integrity Text Proposal Swift Navigation discussion Rel-17 FS\_NR\_pos\_enh

Proposal 1: Agree on Option 1, 2 or 3 for the Additional References proposed by ESA.

Option 1: Include these Tdocs in the list of references for the TR and make a note in Section 9.4 that they have been included.

Option 2: Integrate all of the italicised text from the email into Section 9.4.1.1.2 (Summary of A-GNSS Positioning Integrity Methods).

Option 3: Neither (i.e., to be contribution-led in the WI phase).

Proposal 2: Agree on Option 1 or 2 for the Section 10.10 recommendations.

Option 1: Retain the text in the current TP

Option2: Adopt the updated text proposed by Qualcomm

Proposal 3: Agree to adopt the text proposal as baseline for TR 38.857.

Discussion:

P1:

ESA think it is important to acknowledge these tdocs in the TR somehow, and they think we should take both options 1 and 2 (the text refers back to the references).

Fraunhofer prefer option 2.

Qualcomm would be OK with option 1+2 to capture the references and the additional text.

Swift clarify this can be included with minimal effort.

P2:

Qualcomm think the conclusion should have not too much informative text, and the current form suggests more spec impact than we really need.

ESA agree with Qualcomm. Intel think we could check offline.

* Revised in R2-2102113

Agreements:

Include the additional references (as proposed by ESA) in the list of references for the TR, and integrate the italicised text from the email into section 9.4.1.1.2.

Recommendation text to be updated as proposed by Qualcomm in email.

[R2-2102113](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Docs\R2-2102113.zip) [AT113-e][601][POS] – Integrity Text Proposal Swift Navigation discussion Rel-17 FS\_NR\_pos\_enh

* Endorsed

Other contributions

[R2-2100719](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100719%20Text%20Proposals%20of%20Definitions%20Relating%20to%20Positioning%20Integrity%20Modes.docx) Text Proposals of Definitions Relating to Positioning Integrity Modes Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_pos\_enh

[R2-2101390](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101390%20RAT-dependent%20integrity.docx) On RAT-dependent integrity use cases and error categories Ericsson discussion Rel-17

[R2-2101504](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101504%20Recommendations%20for%20Integrity%20TP.docx) Recommendations for the Integrity Text Proposal Swift Navigation, Intel Corporation discussion

#### 8.11.3.2 Methodologies for network-assisted and UE-assisted integrity

This agenda item will use a summary document (ESA).

Summary document

[R2-2101436](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101436_Summary_of_AI_81132_Integrity_Methodologies.docx) Summary of AI 8.11.3.2 Methodologies for network-assisted and UE-assisted integrity ESA discussion Rel-17 FS\_NR\_pos\_enh Late

The following documents will not be treated individually

[R2-2100106](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100106%20-%20Discussion%20on%20Methodology%20for%20Integrity.docx) Discussion on Methodology for Integrity OPPO discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100376](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100376%20(R17%20NR%20POS%20A81132).doc) Discussion on Methodologies for network-assisted & UE-assisted integrity InterDigital, Inc. discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100674](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100674.docx) Discussion on the methodologies for network-assisted and UE-assisted integrity Spreadtrum Communications discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100686](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100686%20Discussion%20on%20methodologies%20for%20network-assisted%20and%20UE-assisted%20integrity.docx) Discussion on methodologies for network-assisted and UE-assisted integrity vivo discussion FS\_NR\_pos\_enh

[R2-2100720](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100720%20Positioning%20Integrity%20Result%20Reporting.docx) Positioning Integrity Result Reporting Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_pos\_enh

[R2-2100812](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2100812%20Discussion%20on%20methodologies%20for%20positioning%20integrity.doc) Discussion on methodologies for positioning integrity Xiaomi discussion

[R2-2101087](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101087.docx) UE Detection and Signalling of Percieved Threats to GNSS systems Fraunhofer IIS, Fraunhofer HHI discussion R2-2010135

[R2-2101228](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101228%20Discussion%20of%20network-assisted%20and%20UE-assisted%20integrity.docx) Discussion of network-assisted and UE-assisted integrity Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

[R2-2101391](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101391%20GNSS%20Integrity%20Methodologies.docx) GNSS Integrity Methodologies Ericsson discussion Rel-17

[R2-2101437](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202101-02%20-%20RAN2_113-e,%20Online\Extracts\R2-2101437%20Discussion%20on%20GNSS%20position%20integrity%20concepts.docx) Text Proposal to methodologies for GNSS position integrity ESA discussion Rel-17 38.857 FS\_NR\_pos\_enh