3GPP TSG-RAN WG2 Meeting #113bis-e R2-21xxxxx

Online, 12-20 April 2021

Source: Session Chair (MediaTek)

Title: Report of 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.

* [AT113bis-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: Tuesday 2021-04-20 1800 UTC

* [AT113bis-e][601][POS] Positioning Corrections for R-15 and earlier (Huawei)

Scope: Discuss and conclude on the following documents:

* R2-2102916 (field description of commonIEsProvideAssistanceData)
* R2-2102917/ R2-2102918 (posSI acquisition)
* R2-2103216/ R2-2103217/ R2-2103218 (SUPL support)
  + Cross-check with discussion [602] for consistency with R2-2103219/R2-2103220
* R2-2103604/ R2-2103605/R2-2103606/R2-2103607/R2-2103608/R2-2103609/R2-2103610/R2-2103616/R2-2102987 (need codes)

Intended outcome: Agreed CRs

Deadline: Friday 2021-04-16 1000 UTC

* [AT113bis-e][602][POS] Positioning corrections for NR Rel-15 (Samsung)

Scope: Discuss and conclude on R2-2103219/R2-2103220 on SUPL support

Intended outcome: Agreed CRs

Deadline: Friday 2021-04-16 1000 UTC

* [AT113bis-e][603][Relay] Proposals from summary of agenda item 8.7.4.1 (ZTE)

Scope: Continue discussion of the summary of AI 8.7.4.1 and try to reach agreeable proposals.

Intended outcome: Report in R2-2104405

Deadline: Friday 2021-04-16 1000 UTC

* [AT113bis-e][604][Relay] Proposals from summary of agenda item 8.7.4.2 (Futurewei)

Scope: Continue discussion of the summary of AI 8.7.4.2 and try to reach agreeable proposals.

Intended outcome: Report in R2-2104406

Deadline: Friday 2021-04-16 1000 UTC

* [AT113bis-e][605][POS] MO-LR handling and potential LS (Huawei)

Scope: Discuss the proposal in R2-2104046 and determine if some clarification is needed from SA2/CT1/CT4.

Intended outcome: Approved LS if needed, in R2-2104409

Deadline: Tuesday 2021-04-20 0800 UTC

* [AT113bis-e][606][POS] Positioning RRC open issues (Ericsson)

Scope: Discuss P2 and P3 from R2-2103920 and conclude on a CR if needed.

Intended outcome: Agreed CR in R2-2104410 – replaced by R2-2104576

Deadline: Tuesday 2021-04-20 0800 UTC

* [AT113bis-e][607][POS] LPP proposals (CATT)

Scope: Discuss the proposals in R2-2103129 and conclude on which are agreeable.

Intended outcome: Report to comeback session, in R2-2104411

Deadline: Tuesday 2021-04-20 0800 UTC

* [AT113bis-e][608][POS] SP positioning SRS activation/deactivation MAC CE (CATT)

Scope: Discuss R2-2104504 including backward compatibility aspects, and determine if a revision is needed.

Intended outcome: Agreed CR if possible, in R2-2104412

Deadline: Tuesday 2021-04-20 0800 UTC

* [AT113bis-e][609][Relay] Relay discovery configuration (Ericsson)

Scope: Discuss P1a/P4a/P9a/P9b-1/P9b-2/P9c/P12 and attempt to reach convergence.

Intended outcome: Report in R2-2104413

Deadline: Monday 2021-04-19 1000 UTC

* [AT113bis-e][610][Relay] AS criteria for relay (re)selection (InterDigital)

Scope: Discuss P12/P13/P15 from the (re)selection summary and attempt to down-select AS criteria for (re)selection.

Intended outcome: Report in R2-2104414

Deadline: Monday 2021-04-19 1000 UTC

* [AT113bis-e][611][Relay] Remaining proposals on relay (re)selection (Qualcomm)

Scope: Discuss the proposals for discussion from the (re)selection summary and converge where possible.

Intended outcome: Report in R2-2104415

Deadline: Monday 2021-04-19 1000 UTC

* [AT113bis-e][612][POS] LS to SA2 on scheduled location time (Qualcomm)

Scope: Draft an LS to SA2 indicating that RAN2 intend to support a scheduled location time. Questions for clarification on the SA2 CR can be discussed.

Intended outcome: Approved LS in R2-2104587

Deadline: Tuesday 2021-04-20 0800 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.

* [AT113bis-e][601][POS] Positioning Corrections for R-15 and earlier (Huawei)

Scope: Discuss and conclude on the following documents:

* R2-2102916 (field description of commonIEsProvideAssistanceData)
* R2-2102917/ R2-2102918 (posSI acquisition)
* R2-2103216/ R2-2103217/ R2-2103218 (SUPL support)
  + Cross-check with discussion [602] for consistency with R2-2103219/R2-2103220
* R2-2103604/ R2-2103605/R2-2103606/R2-2103607/R2-2103608/R2-2103609/R2-2103610/R2-2103616/R2-2102987 (need codes)

Intended outcome: Agreed CRs

Deadline: Friday 2021-04-16 1000 UTC

[R2-2104517](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104517%20%5bAT113b-e%5d%5b601%5d%5bPOS%5d%20Positioning%20Corrections%20for%20R15%20and%20earlier.docx) Summary of [AT113bis-e][601][POS] Positioning Corrections for R-15 and earlier Huawei, HiSilicon discussion Rel-15

* Noted without presentation

[R2-2102916](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\36355_CR0250_(Rel-14)_R2-2102916.docx) Corrections on the field description of commonIEsProvideAssistanceData in TS36.355 CATT, Huawei, HiSilicon CR Rel-14 36.355 14.7.0 0250 - F LTE\_feMTC-Core

* Not pursued (conclusion of email discussion [601])

[R2-2102917](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\36331_CR4611_(Rel-15)_R2-2102917.docx) Corrections on the acquisition of a posSI message CATT CR Rel-15 36.331 15.13.0 4611 - F LCS\_LTE\_acc\_enh-Core

Discussed in email discussion [601], concluded to need the following changes:

* First change to be reworded to “where T is the si-Periodicity or the posSI-Periodicity of the concerned SI message”
* Correct the typo from “si-posPeriodicity” to “posSI-Periodicity” also in section 5.2.3a
* Remove impacted 5G architecture options from coversheet
* Agreed in principle with these changes as R2-2104518 (conclusion of email discussion [601])

[R2-2102918](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\36331_CR4612_(Rel-16)_R2-2102918.docx) Corrections on the acquisition of a posSI message CATT CR Rel-16 36.331 16.4.0 4612 - A LCS\_LTE\_acc\_enh-Core

Discussed in email discussion [601], concluded to need the following changes:

* Change the impacted spec to 36.331
* First change to be reworded to “where T is the si-Periodicity or the posSI-Periodicity of the concerned SI message”
* Correct the typo from “si-posPeriodicity” to “posSI-Periodicity” also in section 5.2.3a
* Remove impacted 5G architecture options from coversheet
* Agreed in principle with these changes as R2-2104519 (conclusion of email discussion [601])

[R2-2103216](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103216.docx) Correction on SUPL support of positioning methods Samsung CR Rel-14 36.305 14.3.0 0100 - F UTRA\_LTE\_iPos\_enh2-Core

* Not pursued (conclusion of email discussion [601])

[R2-2103217](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103217.docx) Correction on SUPL support of positioning methods Samsung CR Rel-15 36.305 15.5.0 0101 - A UTRA\_LTE\_iPos\_enh2-Core

* Not pursued (conclusion of email discussion [601])

[R2-2103218](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103218.docx) Correction on SUPL support of positioning methods Samsung CR Rel-16 36.305 16.2.0 0102 - A UTRA\_LTE\_iPos\_enh2-Core

* Not pursued (conclusion of email discussion [601])

R2-2103603 Correction to need code for DL LPP message-R16 Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0297 - F NR\_pos-Core, NR\_newRAT-Core, LCS\_LTE\_acc\_enh-Core, NB\_IOTenh-Core, LTE\_feMTC-Core, LCS\_BDS-LTE-Core, LCS\_LTE Withdrawn

[R2-2103604](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103604%20Correction%20to%20need%20code%20for%20DL%20LPP%20message-R15.doc) Correction to need code for DL LPP message-R15 Huawei, HiSilicon CR Rel-15 37.355 15.1.0 0298 - F NR\_newRAT-Core, LCS\_LTE\_acc\_enh-Core, NB\_IOTenh-Core, LTE\_feMTC-Core, LCS\_BDS-LTE-Core, LCS\_LTE

Discussed in email discussion [601], concluded to need the following changes:

* Change the need code in the CR for the fields within AssistanceDataSIBElement from Need ON to Need OP
* Change the need code of associated DL-PRS-ID in NR-DL-PRS-BeamInfo and NR-TRP-LocationInfo as Need OP
* Revised in R2-2104524

[R2-2104524](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104524%20Correction%20to%20need%20code%20for%20DL%20LPP%20message-R15.doc) Correction to need code for DL LPP message-R15 Huawei, HiSilicon, Lenovo CR Rel-15 37.355 15.1.0 0298 1 F NR\_newRAT-Core, LCS\_LTE\_acc\_enh-Core

* Agreed in principle (conclusion of email discussion [601])

[R2-2103605](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103605%20Correction%20to%20need%20code%20for%20DL%20LPP%20message-R14.doc) Correction to need code for DL LPP message-R14 Huawei, HiSilicon CR Rel-14 36.355 14.7.0 0251 - F NB\_IOTenh-Core, LTE\_feMTC-Core, LCS\_BDS-LTE-Core, LCS\_LTE

* Not pursued (conclusion of email discussion [601])

[R2-2103606](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103606%20Correction%20to%20need%20code%20for%20DL%20LPP%20message-R13.doc) Correction to need code for DL LPP message-R13 Huawei, HiSilicon CR Rel-13 36.355 13.3.0 0252 - A LCS\_BDS-LTE-Core, LCS\_LTE

* Not pursued (conclusion of email discussion [601])

[R2-2103607](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103607%20Correction%20to%20need%20code%20for%20DL%20LPP%20message-R12.doc) Correction to need code for DL LPP message-R12 Huawei, HiSilicon CR Rel-12 36.355 12.5.0 0253 - F LCS\_BDS-LTE-Core, LCS\_LTE

* Not pursued (conclusion of email discussion [601])

[R2-2103608](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103608%20Correction%20to%20need%20code%20for%20DL%20LPP%20message-R11.doc) Correction to need code for DL LPP message-R11 Huawei, HiSilicon CR Rel-11 36.355 11.6.0 0254 - A LCS\_LTE

* Not pursued (conclusion of email discussion [601])

[R2-2103609](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103609%20Correction%20to%20need%20code%20for%20DL%20LPP%20message-R10.doc) Correction to need code for DL LPP message-R10 Huawei, HiSilicon CR Rel-10 36.355 10.12.0 0255 - A LCS\_LTE

* Not pursued (conclusion of email discussion [601])

[R2-2103610](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103610%20Correction%20to%20need%20code%20for%20DL%20LPP%20message-R9.doc) Correction to need code for DL LPP message-R9 Huawei, HiSilicon CR Rel-9 36.355 9.14.0 0256 - F LCS\_LTE

* Not pursued (conclusion of email discussion [601])

[R2-2103616](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103616%20Correction%20to%20need%20code%20for%20DL%20LPP%20message-R16.doc) Correction to need code for DL LPP message-R16 Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0292 1 F NR\_pos-Core, NR\_newRAT-Core, LCS\_LTE\_acc\_enh-Core, NB\_IOTenh-Core, LTE\_feMTC-Core, LCS\_BDS-LTE-Core, LCS\_LTE R2-2101827

Discussed in email discussion [601], concluded to need the following changes:

* Change the need code in the CR for the fields within AssistanceDataSIBElement from Need ON to Need OP
* Change the need code of associated DL-PRS-ID in NR-DL-PRS-BeamInfo and NR-TRP-LocationInfo as Need OP
* Revised in R2-2104525

[R2-2104525](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104525%20Correction%20to%20need%20code%20for%20DL%20LPP%20message-R16.doc) Correction to need code for DL LPP message-R16 Huawei, HiSilicon, Lenovo CR Rel-16 37.355 16.4.0 0292 2 F NR\_pos-Core, NR\_newRAT-Core, LCS\_LTE\_acc\_enh-Core

* Agreed in principle (conclusion of email discussion [601])

# 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.

NOTE: FOR R2#113bis-e it is expected that ~30% of the input tdocs under this AI will be selected for initial postponement to the next meeting.

## 5.5 Positioning corrections

Corrections to both the stage 2 and stage 3 aspects related to positioning. Stage 2 CRs shall be discussed with the specification rapporteur (Sven Fischer sfischer@qti.qualcomm.com) before submission. Stage 2 CRs not discussed with the specification rapporteur will not be treated.

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

* [AT113bis-e][602][POS] Positioning corrections for NR Rel-15 (Samsung)

Scope: Discuss and conclude on R2-2103219/R2-2103220 on SUPL support

Intended outcome: Agreed CRs

Deadline: Friday 2021-04-16 1000 UTC

[R2-2104512](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104512.docx) Report of [AT113b-e][602][POS] Positioning corrections for NR Rel-15 (Samsung) Samsung discussion Rel-15

* Noted without presentation

[R2-2103219](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103219.docx) Correction on SUPL support of positioning methods Samsung CR Rel-15 38.305 15.8.0 0070 - F UTRA\_LTE\_iPos\_enh2-Core

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

[R2-2103220](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103220.docx) Correction on SUPL support of positioning methods Samsung CR Rel-16 38.305 16.4.0 0071 - A UTRA\_LTE\_iPos\_enh2-Core

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

# 6 Rel-16 NR Work Items

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

Tdoc Limitation: 30 tdocs in total for all sub agenda items, or the restriction for each sub-AI, whichever is more restrictive.

NOTE: FOR R2#113bis-e it is expected that ~30% of the input tdocs under this AI will be selected for initial postponement to the next meeting.

## 6.3 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: 7 tdocs, See also tdoc limitation for Agenda Item 6

### 6.3.1 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. Stage 2 CRs not discussed with the specification rapporteur will not be treated.

This agenda item may use a summary document (decision to be made based on submitted tdocs).

Summary document

[R2-2104018](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104018%20Summary%20AI_6_3_1.docx) Summary of agenda item 6.3.1 - REL-16 NR Positioning Stage 2 Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_pos-Core Late

Proposal 1: RAN2 to discuss if the interpretation in Rapporteur’s comments under section 2.1 is correct or not. If the Rapporteur’s comment is correct, it is proposed to not agree the CR in R2-2103922 but instead RAN2 may consider a clarification to TS 37.355 for the description of NR-DL-PRS-ProcessingCapability IE.

Proposal 2: RAN2 to put the CR in R2-2104046 on hold and send LS to SA2 and CT4 copying CT1 to get clarification on the purpose of including LPP PDU in the LCS MO-LR Request in the UL NAS TRANSPORT message form UE to AMF and whether there are any rules or restriction about which LPP messages/IE can be included in the LPP PDU.

Proposal 3: RAN2 to complete the discussion on CR in R2-2104048 for support of UE positioning measurements in RRC\_IDLE for NB-IoT UE and decide whether to agree the CR.

Discussion:

P1:

Ericsson understand that the RRC signalling allows the UE to populate the message for all four PFLs, but the LPP capability indicates that the UE processes one at a time.

vivo agree with the rapporteur and think this is not a stage 2 issue.

Qualcomm wonder what happens if one PFL is in FR1 and the other in FR2: Would there still be one request per PFL? They think the interpretation by Ericsson is similar to LTE but the NR concept of PFL is somewhat different, and suggest this could be handled by network implementation.

Huawei have the same view as the rapporteur and wonder why the processing of a single PFL would be related to the signalling for the measurement gap.

Samsung have the same view as vivo.

* Noted (can consider in future if there is an issue).

P2:

Huawei would be OK to have the LS and wait on the CR, but they think the LS should go to CT1/CT4 with SA2 in Cc:.

Qualcomm think the spec is clear and there are already test cases from LTE, but could accept sending an LS.

Nokia agree some clarification is needed and think 23.273 is a bit open for interpretation.

* [AT113bis-e][605][POS] MO-LR handling and potential LS (Huawei)

Scope: Discuss the proposal in R2-2104046 and determine if some clarification is needed from SA2/CT1/CT4.

Intended outcome: Approved LS if needed, in R2-2104409

Deadline: Tuesday 2021-04-20 0800 UTC

P3:

vivo think this is not a correction but an enhancement.

CATT understand that this is for ng-eNB connected to 5GC, and support the CR.

Huawei think it is a correction because this is already supported in the current positioning architecture, but not captured in the stage 2.

Intel support the CR but think the WI code should not be for NR positioning. Chair suggests it could be TEI16.

Qualcomm want to clarify that this is not applicable to NR positioning methods, because the NR measurements are only applicable in RRC\_CONNECTED. They agree for RAT-independent this should be supported. Huawei confirm there is no intention to apply it to NR positioning methods, and since this is for an NB-IoT UE connected to ng-eNB, there can be no NR positioning.

Ericsson think it is not clear in the CR what positioning procedures it would be used for and suggest email checking.

Qualcomm think the CR matches what we have in LTE, and in light of Huawei’s comment they don’t think we need email checking.

Huawei point out this was discussed last meeting, and based on feedback received then they understand it was intended to be agreed, with some chapter numbering fixed. They understand that companies want to have it reflected for commercial use cases, hence Rel-16 only.

Intel agree no email is needed and we can take the CR as it is.

* Agreed in principle with WI code changed to TEI16, in R2-2104407.

R2-2104409 (LS from [605]) Huawei, HiSilicon LS out To:SA2

* Not provided (no LS needed per conclusion of email discussion [605])

The following documents will not be individually treated

[R2-2103922](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103922%20UE%20PFL.docx) UE handling of Positioning Frequency Layer Ericsson CR Rel-16 38.305 16.4.0 0060 1 F NR\_pos-Core R2-2101385

* Not pursued

[R2-2104046](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104046%20Correction%20to%20NR%20stage2%20spec%20for%20MO-LR.DOC) Correction to NR stage2 spec for MO-LR Huawei, HiSilicon CR Rel-16 38.305 16.4.0 0072 - F NR\_pos-Core

* Revised in R2-2104527 (covered in email discussion [605])

[R2-2104527](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104527%20Correction%20to%20NR%20stage2%20spec%20for%20MO-LR.DOC) Correction to NR stage2 spec for MO-LR Huawei, HiSilicon CR Rel-16 38.305 16.4.0 0072 1 F NR\_pos-Core

* Agreed in principle (conclusion of email discussion [605])

R2-2104047 Correction to LTE stage2 spec for MO-LR Huawei, HiSilicon CR Rel-16 36.305 16.2.0 0103 - F LCS\_LTE, TEI16 Withdrawn

[R2-2104048](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104048%20Correction%20to%205G%20support%20for%20NB-IOT%20positioning.doc) Correction to 5G support for NB-IOT positioning Huawei, HiSilicon CR Rel-16 38.305 16.4.0 0069 1 F NR\_pos-Core R2-2101929

* Agreed in principle with WI code changed to TEI16, in R2-2104407.

### 6.3.2 RRC corrections

Including impact to 36.331, 38.331, and 38.306.

This agenda item may use a summary document (decision to be made based on submitted tdocs).

Summary document

[R2-2103920](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103920.docx) Summary for RRC NR Positioning Ericsson discussion Late

Proposal 1 RAN2 to agree CR R2-2102924 for the corrections of description of SRS-Config to reflect positioning impacts.

Proposal 2 RAN2 to discuss CR R2-2103849 and agree to clarify that SI offset is applicable for all the SI in the posSISchedulingInfoList.

Proposal 3 RAN2 to discuss and agree to clarify as why each posSIB cannot be contained only in a single SI message.

Proposal 4 The CR to clarify posSI-RequesConfig is for normal UL or Supplementary Uplink is not agreed as it requires similar change also for legacy field description

Discussion:

P1:

Ericsson think the slash in the field description should be a comma.

* Agreed in principle with the slash changed to a comma, in R2-2104408.

P2:

CATT agree with the rapporteur that adding “all” is good enough.

Ericsson think we should just add “all”.

Apple think the change in the field description can be simplified and it is OK to remove the second sentence.

Nokia wonder if this was intentional to leave scheduling flexibility and think it could be left to implementation.

Intel agree with the CR, and think if we only have the first change it is still unclear if the network can indicate the field differently in different SIs. So they would prefer to have the second change as well.

vivo agree with removing the second sentence and think the description in section 5.2 is already clear.

Ericsson think the flexibility suggested by Nokia is not possible with the acquisition procedure we have, and we should clarify that this is consistent across the SI messages.

Lenovo are OK to align with the LTE behaviour, but think just the first change is not sufficient since the offset can be signalled per SI message.

* Email

P3:

Ericsson think we should clarify the intention.

Nokia think the rules are the same for SIBs and posSIBs, and the posSIB should appear in at most one SI message. Chair asks about different GNSS constellations; Nokia understand that in this case they should appear in the same SI message but maybe different instances.

Qualcomm think the existing text is aligned with the proposal already and the omission of the posSIB was intentional.

* Noted (can discuss by email if a CR is needed)

P4:

Ericsson think we should not change as it would create a mismatch with the legacy field.

Lenovo think the CR does not take UL carrier selection into account and anyway the UE will only use one. They understand that this is why it was not captured in the legacy field description.

* CR is not pursued
* [AT113bis-e][606][POS] Positioning RRC open issues (Ericsson)

Scope: Discuss P2 and P3 from R2-2103920 and conclude on a CR if needed.

Intended outcome: Agreed CR in R2-2104410

Deadline: Tuesday 2021-04-20 0800 UTC

[R2-2104576](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104576.docx) [AT113bis-e][606][POS] Positioning RRC open issues (Ericsson) Ericsson discussion

* Noted without presentation

[R2-2104410](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104410.docx) Correction for the positioning SI offset and clarification on mapping of posSIB to SI Ericsson, Apple CR Rel-16 38.331 16.4.1 2574 - F NR\_pos-Core

* Agreed in principle

The following documents will not be individually treated

[R2-2102924](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\38331_CR2490_(Rel-16)_R2-2102924.docx) Corrections on the description of SRS-Config CATT CR Rel-16 38.331 16.4.1 2490 - F NR\_pos-Core

* Agreed in principle with the slash changed to a comma, in R2-2104408.

[R2-2103849](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103849_38.331CR_r16_posSI_offset.docx) Correction on the SI offset usage of posSI Scheduling Apple CR Rel-16 38.331 16.4.1 2539 - F NR\_pos-Core

* Merged into R2-2104576

[R2-2103919](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103919%20Same%20posSIB.docx) Same posSIB-Type in multiple SI messages Ericsson discussion

* Noted

[R2-2104175](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104175%20(6.3.2)%20CR%20on%20POS%20si%20config%20SUL.docx) Correction on posSI-RequestConfig and posSI-RequestConfigSUL field description Samsung R&D Institute UK CR Rel-16 38.331 16.4.1 2559 - F NR\_pos-Core

* Not pursued

### 6.3.3 LPP corrections

This agenda item may use a summary document (decision to be made based on submitted tdocs).

Summary document

[R2-2103129](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103129%20Summary%20of%20AI%206.3.3%20LPP%20corrections.docx) Summary of AI 6.3.3 LPP corrections CATT discussion Rel-16 37.355 NR\_pos-Core Late

Easy to agree:

Proposal 1: RAN2 to discuss if it is agreeable to add a description for the mapping of reported value and the measured negative value, and if it is agreeable to add clarification that all DL PRS resource sets belonging to the same positioning frequency layer have the same value of the parameters dl-PRS-SubcarrierSpacing, dl-PRS-CyclicPrefix and dl-PRS-PointA. If so, have an offline email discussion to come up with a suitable text proposal for the modifications. [R2-2102920]

Proposal 2: RAN2 to agree adding a field description for nr-AdType and clarifying in the field description of that the codepoint ‘ul-srs’ is not used in this release. [R2-2102921]

Proposal 6: RAN2 to agree the correction to change the field name from nr-PositionCalculationAssistanceData to nr-PositionCalculationAssistance. And merge all of such typo related corrections into one CR. [R2-2103924]

Proposal 11: RAN2 to discuss whether it is agreeable to add the field description of additionalPaths, and if this course is pursued, to have an offline email discussion to come up with an agreeable text proposal. [R2-2104269]

Proposal 12: The CR to add description of the construction of timestamp and clarify these parameters comes from reference cell is not agreed, since nr-TimeStamp is also reported in DL-AoD and/or Multi-RTT measurement which has no reference cell for measurement report. [R2-2102786]

Need further discussion:

Proposal 3: RAN2 to discuss whether to agree to add the missing need codes in principle first and which corresponding version of the specifications need to be modified. If agreed to add the missing need codes, the details of the need codes should be further discussed case by case via an offline email discussion. [R2-2102987]

Proposal 4: RAN2 to discuss if it is agreeable 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. [R2-2103921]

Proposal 5: RAN2 to discuss whether to include updateRateTimeUnit and updateRateTime as substitute of expirationTime or in addition to the expirationTime for some posSIBs. [R2-2103923]

Proposal 7: RAN2 to discuss whether to agree the following corrections proposed by R2-2104049 [7] one by one by email discussion. [R2-2104049]

Proposal 8: RAN2 to discuss 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. If it is OK, to have an offline email discussion to check all the LPP IEs need to make such corrections. [R2-2104050]

Proposal 9: RAN2 to discuss whether it is OK to make above corrections proposed by R2-2104051 [9] one by one by email discussion. [R2-2104051]

Proposal 10: RAN2 to discuss whether need to further clarify the cases under which the two error types (locationServerErrorCauses, targetDevidceErrorCauses) should be included. [R2-2104052]

Discussion:

P1:

CATT think this is an essential CR and could be agreed as it is.

Qualcomm are OK with the CR, but think the second change duplicates what is already implied by the ASN.1 and there are therefore no interoperability problems. They see it as more an informative change.

Intel have the same view as Qualcomm and do not consider this an essential CR.

* [AT113bis-e][607][POS] LPP proposals (CATT)

Scope: Discuss the proposals in R2-2103129 and conclude on which are agreeable.

Intended outcome: Report to comeback session, in R2-2104411

Deadline: Tuesday 2021-04-20 0800 UTC

[R2-2104411](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104411%20Report%20of%20%5bAT113bis-e%5d%5b607%5d%5bPOS%5d%20LPP%20proposals%20(CATT).docx) Report of [AT113bis-e][607][POS] LPP proposals (CATT) CATT discussion Rel-16 NR\_pos-Core

• Merged into one CR:

Proposal 1: CR in R2-2102920 can be agreed and revised to R2-2104520 with the following modifications：

1. change the reference section number in the 1st change

2. consistent the wordings for the 2nd change, i.e., “DL PRS” to “DL-PRS”, “positioning frequency layer” to “Positioning Frequency layer”

Proposal 5: The changes of the CR in R2-2103924 can be pursued and merged to the CR R2-2104520.

Proposal 10: The changes of the CR R2-2104269 can be pursued with some modification proposed by QC, and can be merged to the CR R2-2104520.

• Revised CRs:

Proposal 3: CR in R2-2103921 can be agreed with some modifications, e.g., "e.g. ARFCN" should be modified to "e.g., DL-PRS PointA" and revised to R2-2104575.

Proposal 6: CR in R2-2104049 can be agreed with the modifications proposed by QC and Nokia and revised to R2-2104565:

1. New Table entry for nr-DL-PRS-ResourceSetID should be the first row of the field description Table.

2. "DL-PRS resource set ID""DL-PRS Resource Set ID

3. "DL-PRS source set"  "DL-PRS Resource Set"

4. "selected DL-PRS resource"  "selected DL-PRS Resource"

5. dl-PRS-QCL-Info sub-field, i.e., dl-PRS and qcl-DL-PRS-ResourceID should be updated as proposed by Nokia.

Proposal7: CR in R2-2104050 is agreed, without the change for the field description for nr-dl-tdoa-LocationInformation and nr-dl-AoD-LocationInformation and revised to R2-2104566.

Proposal 8: The 1st change and the 3rd change of the CR in R2-2104051 can be pursued and revised to R2-2104567.

Not agreed CRs:

Proposal 2: CR in R2-2102921 is not pursued, given that there are different views on the usage of code point “ul-srs”. Proponent may discuss offline with other companies to see if there is interest to come back to this issue in the next meeting.

Proposal 4: Proposals of R2-2103923 are not pursued.

Proposal 9: CR in R2-2104052 is not pursed.

Proposal 11: CR in R2-2102786 is not pursued.

The following documents will not be individually treated

[R2-2102786](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102786%20%20Draft%20CR%20on%20timestamp%20reference%20in%20NR%20positioning%20measurement%20report.docx) 37.355 Draft CR on timestamp reference in NR positioning measurement report vivo draftCR Rel-16 37.355 16.4.0 NR\_pos-Core

* Not pursued

[R2-2102920](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\37355_CR0294_(Rel-16)_R2-2102920.docx) Corrections on the field description of NR-AdditionalPathList and DL-PRS positioning frequency layer related parameters CATT CR Rel-16 37.355 16.4.0 0294 - F NR\_pos-Core

* Revised in R2-2104520 (covered in email discussion [607])

[R2-2104520](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\37355_CR0294r1_(Rel-16)_R2-2104520.docx) Corrections on the field description of NR-AdditionalPathList and DL-PRS positioning frequency layer related parameters CATT, Ericsson, ZTE CR Rel-16 37.355 16.4.0 0294 1 F NR\_pos-Core

* Agreed in principle

[R2-2102921](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\37355_CR0295_(Rel-16)_R2-2102921.docx) Corrections on NR-Multi-RTT-RequestAssistanceData CATT CR Rel-16 37.355 16.4.0 0295 - F NR\_pos-Core

* Not purused

R2-2102922 Corrections on the need code of segmentationInfo within CommonIEsRequestLocationInformation and CommonIEsProvideAssistanceData CATT CR Rel-16 37.355 16.4.0 0296 - F NR\_pos-Core Late

[R2-2102987](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102987_LPP_missing_need_codes.doc) Considerations on missing need codes in LPP Lenovo, Motorola Mobility discussion Rel-16 NR\_pos-Core

[R2-2103921](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103921%20PFLGap.docx) LPP Layer interaction with lower layers for Positioning Frequency layer and Measurement Gap Ericsson CR Rel-16 37.355 16.4.0 0288 2 F NR\_pos-Core R2-2102123

* Revised in R2-2104575

[R2-2104575](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104575.docx) LPP Layer interaction with lower layers for Positioning Frequency layer and Measurement Gap Ericsson CR Rel-16 37.355 16.4.0 0288 3 F NR\_pos-Core

* Agreed in principle

[R2-2103923](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103923%20granularExp.docx) Need of compact expirationTime Indication Ericsson discussion

* Not pursued

[R2-2103924](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103924%20fieldname.docx) Correction of field description name Ericsson CR Rel-16 37.355 16.4.0 0299 - F NR\_pos-Core

* Merged into R2-2104520 (covered in email discussion [607])

[R2-2104049](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104049%20Correction%20to%20PRS%20configuration.doc) Correction to PRS configuration Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0300 - F NR\_pos-Core

* Revised in R2-2104565 (covered in email discussion [607])

[R2-2104565](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104565%20Correction%20to%20PRS%20configuration.doc) Correction to PRS configuration Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0300 1 F NR\_pos-Core

* Agreed in principle

[R2-2104050](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104050%20Correction%20to%20the%20uplink%20LPP%20message.doc) Correction to the uplink LPP message Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0301 - F NR\_pos-Core

* Revised in R2-2104566 (covered in email discussion [607])

[R2-2104566](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104566%20Correction%20to%20the%20uplink%20LPP%20message.doc) Correction to the uplink LPP message Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0301 1 F NR\_pos-Core

* Agreed in principle

[R2-2104051](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104051%20Correction%20to%20DL-PRS%20capability.doc) Correction to DL-PRS capability Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0302 - F NR\_pos-Core

* Revised in R2-2104567 (covered in email discussion [607])

[R2-2104567](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104567%20Correction%20to%20DL-PRS%20capability.doc) Correction to DL-PRS capability Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0302 1 F NR\_pos-Core

* Agreed in principle

[R2-2104052](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104052%20Correction%20on%20positioning%20error%20reporting.doc) Correction on positioning error reporting Huawei, HiSilicon CR Rel-16 37.355 16.4.0 0303 - F NR\_pos-Core

* Not pursued

[R2-2104269](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104269_CR_37355_additionalPaths.docx) Correction on the field description of additionPaths ZTE Corporation, Sanechips CR Rel-16 37.355 16.4.0 0304 - F NR\_pos-Core

* Merged into R2-2104520 (covered in email discussion [607])

### 6.3.4 MAC corrections

[R2-2102923](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\38321_CR1072_(Rel-16)_R2-2102923.docx) Corrections on SP Positioning SRS Activation and Deactivation MAC CE CATT CR Rel-16 38.321 16.4.0 1072 - F NR\_pos-Core

* Revised in R2-2104504

[R2-2104504](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\38321_CR1072r1_(Rel-16)_R2-2104504.docx) Corrections on SP Positioning SRS Activation and Deactivation MAC CE CATT CR Rel-16 38.321 16.4.0 1072 1 F NR\_pos-Core

Discussion:

Qualcomm wonder if a description is needed for the bit order of the split fields (which field holds the MSB).

Huawei think the CR is correct in principle: The length of the field should be extended. On Qualcomm’s comment, they think there is some general description in 38.321 and would like to check offline.

Nokia are OK with the CR.

* Revised in R2-2104412
* [AT113bis-e][608][POS] SP positioning SRS activation/deactivation MAC CE (CATT)

Scope: Discuss R2-2104504 including backward compatibility aspects, and determine if a revision is needed.

Intended outcome: Agreed CR if possible, in R2-2104412

Deadline: Tuesday 2021-04-20 0800 UTC

[R2-2104412](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\38321_CR1072r2_(Rel-16)_R2-2104412.docx) Corrections on SP Positioning SRS Activation and Deactivation MAC CE CATT CR Rel-16 38.321 16.4.0 1072 2 F NR\_pos-Core

Huawei think this CR is OK, but they do not want to introduce a UE capability.

Ericsson thought the objective of the discussion was to do it without capability.

After discussion of the capability CRs, the coversheet of this CR may need updating to indicate that the CR is mandatory (depending on the conclusion on capability and on interpretation of the interoperability issues).

* Postponed

[R2-2104417](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\38306_CR0572_(Rel-16)_R2-2104417.docx) Corrections on the UE capability of indication on supporting the extension of Positioning SRSresourceID CATT CR Rel-16 38.306 16.4.0 0572 - F NR\_pos-Core

Chair understands that companies not wanting a capability CR feel that there are no implementations in the field and the network can always assume the UE will implement the MAC CR.

Ericsson point out that the RRC allows 6 bits already.

Intel think there are no implementations in the field, and the old format does not work so the MAC CR needs to be mandatory.

Nokia agree there may not be implementations in the field, but the network does not know which option to use without a capability bit.

CATT indicate that support for the capability was half-and-half in the email discussion.

Intel think if we do not make the CR mandatory, we need to specify that the network can only use the lower 5 bits.

Nokia think the CR should be documented as mandatory if we do not have the capability bit.

Huawei think if we do not introduce a capability, the CR is automatically mandatory. They do not understand what is different here compared to the corrections to LPP that have interoperability issues, e.g. the need code corrections where UEs could have different interpretations if they do not implement the CR.

Chair wonders if the network would blindly use the 6-bit value for all UEs. Huawei understand that it would, and UEs that do not implement the CR will work with 5-bit values.

CATT think if a UE does not support the CR, the UE will read the E bit as a reserved bit and can see the wrong resource ID value (e.g. it reads 50 as 18). Huawei think nothing is wrong if the UE configures a 5-bit value.

* Postponed

[R2-2104418](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\38331_CR2580_(Rel-16)_R2-2104418.docx) Corrections on the UE capability of indication on supporting the extension of Positioning SRSresourceID CATT CR Rel-16 38.331 16.4.1 2580 - F NR\_pos-Core

* Postponed

# 7 Rel-16 EUTRA Work Items

Essential corrections

## 7.5 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.

[R2-2104264](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104264%20Correction%20to%20LTE%20stage2%20spec%20for%20MO-LR.DOC) Correction to LTE stage2 spec for MO-LR Huawei, HiSilicon CR Rel-16 36.305 16.2.0 0104 - F LCS\_LTE, TEI16

* Revised in R2-2104526 (covered in email discussion [605])

[R2-2104526](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104526%20Correction%20to%20LTE%20stage2%20spec%20for%20MO-LR.DOC) Correction to LTE stage2 spec for MO-LR Huawei, HiSilicon CR Rel-16 36.305 16.2.0 0104 1 F LCS\_LTE, TEI16

* Agreed in principle (conclusion of email discussion [605])

# 8 Rel-17 NR Work Items

## 8.7 NR Sidelink relay SI

(NR\_XYZ\_enh-Core; leading WG: RAN2; REL-17; WID: RP-210904)

Time budget: 1.5 TU

Tdoc Limitation: 5 tdocs

Email max expectation: 4-5 threads

Focus for this meeting: Progress the common topics on relay discovery and re/selection (including identification of the potential AS re/selection criteria other than signal strength), and understand dependencies on other groups.

### 8.7.1 Organizational

TS updates, rapporteur inputs. Documents in this AI do not count towards the tdoc limitation.

[R2-2102890](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102890%20-%20Work%20planning%20for%20R17%20SL%20relay-rm1.docx) Work planning for R17 SL relay OPPO, CMCC Work Plan Rel-17

=> Revised in R2-2104299

[R2-2104299](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104299%20-%20Work%20planning%20for%20R17%20SL%20relay.docx) Work planning for R17 SL relay OPPO, CMCC Work Plan Rel-17

CATT wonder about some aspects of the Q3 work plan. Can be discussed offline.

* Noted

Running CR rapporteurs: (NOTE: Updated after online session)

- 38.300: MediaTek

- 38.304: Ericsson

- 38.306: Qualcomm

- 38.321: ~~OPPO~~ Apple

- 38.322/323: ~~Apple~~ Samsung

- 38.331: Huawei

- 38.3xx (adaptation layer): OPPO

Work on the CRs is expected to start from RAN2#115-e (stage 2 may start earlier depending on outcomes of this meeting). Rapporteurs should judge whether to start the running CR immediately from RAN2#115-e or later on, based on the agreements and spec impact.

Agreements from the SI phase are valid unless a decision is taken to revert them; RAN2 do not need to re-confirm each point individually.

### 8.7.2 Relay discovery

Re-using LTE discovery as baseline.

Summary document

[R2-2104297](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104297%20Summary%20of%208.7.2%20relay%20discovery_v3.doc) Summary of 8.7.2 relay discovery Huawei, HiSilicon discussion Rel-17 NR\_SL\_enh-Core

Proposal 0: [Easy] R2 confirm the following SI phase agreements

Model A and model B discovery model as defined in clause 5.3.1.2 of TS 23.303 [3] are supported for UE-to-Network Relay.

The protocol stack of discovery message is described in Figure 4.2-1 of TR 38.836.

For Relay UE of UE-to-Network Relay,

- The Relay UE needs to be within a minimum and a maximum Uu signal strength threshold(s) if provided by gNB before it can transmit discovery message when in RRC\_IDLE or in RRC\_INACTIVE state.

- Relay UE is allowed to transmit discovery message based on NR sidelink communication configuration provided by gNB in all RRC states.

For Remote UE of UE-to-Network Relay,

- The Remote UE in RRC\_IDLE and RRC\_INACTIVE state is allowed to transmit discovery message if measured signal strength of serving cell is lower than a configured threshold.

- No additional network configuration is needed for Uu measurement by Remote UE in RRC\_IDLE or RRC\_INACTIVE.

- Remote UE out of coverage is always allowed to transmit discovery message based on pre-configuration while not connected with network through a Relay UE yet.

- For Remote UE supporting L3 UE-to-Network Relay which is out of coverage and connected to a gNB indirectly, it is not feasible for the serving gNB to provide radio configuration to transmit discovery message.

A new LCID is introduced for discovery message, i.e., discovery message is carried by a new SL SRB.

Proposal 3a: [Easy] As in LTE, the RRC\_IDLE/RRC\_INACTIVE relay UE is able to perform discovery message transmission, in case:

- Uu RSRP is above a configured minimum threshold by a hysteresis and below a configured maximum threshold by a hysteresis, or

- only minimum threshold is provided and Uu RSRP is above the minimum threshold by a hysteresis, or

- only maximum threshold is provided and Uu RSRP is below the maximum threshold by a hysteresis

Proposal 3b: [Easy] As in LTE, the RRC\_IDLE/RRC\_INACTIVE remote UE is able to perform discovery message transmission, if and only if Uu RSRP of serving cell is below a configured minimum threshold by a hysteresis.

Proposal 5: [Easy] Define threshHighRelay and threshLowRelay for relay UE and threshHighRemote for remote UE. The value range for the three thresholds can be half of RSRP-Range specified in TS 38.331.

Proposal 8a: [Easy] One new SL-SRB4 is used for all discovery messages. Its parameters will be fixed and defined as SCCH configuration in 38.331. (FFS on the LCH priority in Proposal 8b)

Proposal 10: [Easy] No ciphering and integrity protection in PDCP layer is needed for the discovery messages.

Discussion:

ZTE have a concern on the first sub-bullet of P3a; they think perhaps there should be hysteresis here as well. Huawei agree this is needed. ZTE also think the value range of P5 can be discussed in stage 3, and on P3b wonder if it implies that the UE would stop discovery transmission if the RSRP is above the threshold.

vivo think P13 duplicates P6 in (re)selection and prefer the (re)selection version.

InterDigital think the intention of P11 is to reuse mode 1/mode 2 resource allocation for discovery, and they think it is too early to conclude that this is the same for data.

Kyocera think P10 would not be applicable for U2U.

Ericsson think P11 is not right even as a baseline, because the transmission mechanism may be different for relay and remote UE, e.g. the remote UE may not be able to use mode 1.

Qualcomm think for P11, the only issue seems to be the remote UE under mode 1.

Xiaomi wonder if the case in P14 is real; they assume the gNB only provides one type of relay.

Nokia wonder if we can agree to P10; they agree security can be done in upper layers but think we should leave an opening and this is outside RAN2 expertise to do without consulting SA3. Huawei point out there is no company proposal to use PDCP and this would be a new feature; P10 is to reuse the LTE mechanism, which was confirmed by SA3 in LTE. Qualcomm think it is not possible to apply AS security in PDCP layer for discovery, because it is a broadcast message. OPPO agree.

MediaTek think P14 assumes a base station supporting both relay architectures, and they think it is a bit unclear why this would happen. They also note that L2/L3 coexistence is discussed in the CP agenda item. Ericsson have the same concern.

OPPO think P14 is unlikely in a single gNB, but from the network perspective we should assure that a similar configuration can be applied.

Proposal 1a: [For discussion] Discovery message use the shared resource pool as baseline. RAN2 to decide on the supporting of separated resource pool from below options:

* Option 1: Not support separate resource pool.
* Option 2: Also support the separated resource pool, but assume the PHY layer parameters and design will re-use the R16 legacy resource pool design.

Proposal 4a: [For discussion] As in LTE, the remote UE and relay UE in the RRC\_CONNECTED can use the threshold based methods as in IDLE/INACTIVE, to determine whether it is allowed to perform discovery message transmission.

Proposal 4b: [For discussion] FFS on the whether to use the dedicated configuration or SIB configuration.

Proposal 7a: [For discussion] The discovery message content may include: Relay UE’s serving cell ID, Relay UE’s PLMN ID and Relay architecture (i.e. L2 or L3 relay), with detailed formulation left to SA2. (This does not exclude other alternatives.)

Proposal 7b: [For discussion] Send LS to SA2: some AS parameters (at least the agreed ones in P7a) need to be encapsulated by upper layer in discovery message.

Proposal 8b: [Easy] RAN2 to discuss whether to use fixed or configurable logical channel priority for the SL-SRB of discovery message.

Proposal 9a: [For discussion]

For discovery configuration, relay UE and remote UE use the configuration provided via dedicated signaling, if available, in RRC CONNECTED state; Relay UE and remote UE use configuration provided via SIB, if available, in RRC IDLE/INACTIVE state. FFS if relay UE and remote UE can use the configuration provided via SIB, if dedicated configuration is not available, in RRC CONNECTED state.

Proposal 9b-1: [For discussion]

L3 relay UE use pre-configuration for discovery, only if the discovery configuration is not provided by gNB (regardless not provided, or not able to provide, or not able to obtain in OOC, etc.), in case its serving carrier is not shared with carrier for sidelink operation. Otherwise, L3 relay UE use the configuration for discovery provided by gNB.

Proposal 9b-2: [For discussion]

L2 relay UE can only use the configuration for discovery provided by gNB (either via SIB or dedicated signaling).

Proposal 9c: [For discussion]

Both L2 and L3 Remote UE perform discovery based on pre-configuration, only if the discovery configuration is not provided by gNB (regardless not provided, or not able to provide, or not able to obtain in OOC, etc.), in case its serving carrier is not shared with carrier for sidelink operation. Otherwise, Remote UE use the configuration for discovery provided by gNB.

Proposal 12: [For discussion] Transmission power of discovery message is handled same as R16 SL data transmission.

Discussion:

Ericsson wonder if we would send an LS to SA2 as in P7a/P7b. Chair thinks we have not agreed anything to notify them of. OPPO tend to think we should be conservative about sending LSs considering the deadline, and even if we send an urgent LS it would be difficult to get a response by the deadline. OPPO also do not see why this LS is necessary and understand that SA2 are already discussing the issue of discovery message content. Ericsson think SA2 and RAN2 are doing overlapping discussion and we should indicate what we need.

* [AT113bis-e][609][Relay] Relay discovery configuration (Ericsson)

Scope: Discuss P1a/P4a/P9a/P9b-1/P9b-2/P9c/P12 and attempt to reach convergence.

Intended outcome: Report in R2-2104413

Deadline: Monday 2021-04-19 1000 UTC

[R2-2104413](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104413%20-%20Summary%20of%20offline%20609_v5_Ericsson.docx) Summary of [609] Ericsson discussion

[Proposals for potential block approval]

Proposal 1 [Easy][19/23] Shared resource pool shall be the baseline for discovery message transmission/reception.

Proposal 3 [Easy][23/23]: For determining whether remote UE and/or relay UE in RRC CONNECTED can trigger discovery message transmission, i.e., the remote UE and relay UE in the RRC\_CONNECTED can use the threshold based methods as in IDLE/INACTIVE, to determine whether it is allowed to perform discovery message transmission.

Proposal 4 [Easy][23/23]: Relay UE and remote UE (IC) in RRC CONNECTED can use the discovery configuration provided via dedicated signalling if available.

Proposal 5 [Easy][23/23]: Relay UE and remote UE (IC) in RRC IDLE or RRC INACTIVE shall use the discovery configuration provided via SIB if available.

Proposal 7 [Easy][20/22]: WA: L3 relay UE uses pre-configuration for discovery, only if the discovery SIB configuration is not provided by gNB, in case its serving carrier is not shared with carrier for sidelink operation. Otherwise, L3 relay UE uses the configuration for discovery provided by gNB.

Proposal 8 [Easy][22/23]: L2 relay UE will always use the discovery configuration provided by gNB (either via SIB or dedicated signalling).

Proposal 9 [For discussion][17/23]: FFS: Remote UE (regardless of L2 relaying or L3 relaying) performs discovery based on pre-configuration, only if the discovery configuration is not provided by gNB (regardless not provided, or not able to provide, or not able to obtain in OOC, etc.). Otherwise, Remote UE uses the configuration for discovery provided by gNB.

Discussion:

Ericsson clarify it was suggested offline to indicate “discovery SIB configuration” in P7. With this change they think P1-P8 are agreeable.

OPPO wonder if we should differentiate cases where the gNB cannot provide the configuration from cases where it can provide but does not, e.g. because the UE is not authorised for relaying. Chair thinks we do not want to say that a UE not authorised for relaying will still perform discovery. OPPO clarify this is the reason for adding “SIB”.

Xiaomi have some confusion and think the proposal originally covered the case that the gNB was not capable of SL relay operation; they wonder if we need the “e.g.” part in the brackets. Huawei indicate that we did go beyond the initial proposal to cover other cases where the UE has no way to obtain the configuration, and the “e.g.” indicates the most common cases where this happens, but details can be addressed in stage 3.

InterDigital think we should not prevent the case that the gNB does not provide the configuration exactly because it does not want the UE to perform discovery; in this case the gNB should have the final say. Ericsson think this is a correct outcome and the L3 relay UE in this case should still be able to use preconfiguration. InterDigital would disagree with this outcome. Lenovo understand that the gNB should not be able to stop the relay UE from using preconfiguration on a different carrier, but for the serving frequency the UE needs guidance from the network.

Intel have a similar understanding and think the UE can rely on preconfiguration for a non-serving frequency. They wonder how the OOC case can apply for the relay UE, and think we could remove the “e.g.” parenthetical. Apple agree. vivo also agree.

ZTE wonder if the gNB broadcasts a SIB containing SL configuration of a non-serving frequency, whether the relay UE will follow the configuration in the SIB even if it has preconfiguration for that frequency; they understand that it should follow the SIB. They also agree that the parenthetical can be removed.

OPPO indicate the gNB can still forbid discovery by using the SIB configuration, but if the frequency is not in the SIB, it will not be included in the gNB configuration at all.

Xiaomi echo the question from ZTE and think preconfiguration towards a frequency that is also configured by the SIB could cause interference.

[Proposals for online discussion]

Proposal 2 [for discussion][13/23]: In addition to shared resource pool, also support separated resource pool for discovery transmission/reception, but assume the PHY layer parameters and design will re-use the R16 legacy resource pool design.

Proposal 6 [for discussion][16/23]: Relay UE and remote UE (IC) in RRC CONNECTED use the configuration provided via SIB signalling if the configuration configured via dedicated signalling is not available.

Discussion:

P6:

Huawei think we need more time for discussion and it is not agreeable now.

vivo also think we need more time; they wonder if the configuration is for Tx or Rx. Ericsson understand that we cover both if it is a discovery resource pool, but for a shared resource pool the gNB may need to provide an indication of whether the UE can use the pool. vivo think for the Tx pool we should only use dedicated signalling.

ZTE wonder for the Rx resource pool if we would now have dedicated configuration; in the legacy case it is configured only via SIB, so they think the proposal is mainly for Tx pool.

The following documents will not be individually treated

[R2-2102687](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102687%20-%20Discussion%20on%20relay%20discovery.doc) Discussion on relay discovery Qualcomm Incorporated discussion

[R2-2102698](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102698_Discovery%20for%20Sidelink%20U2N%20Relay.docx) Discovery for Sidelink U2N Relay CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2102806](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102806%20(R17%20SL%20Relay%20SI%20AI872%20Discovery).doc) Discovery Procedure for sidelink relay InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2102978](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102978%20Discussion%20on%20Relay%20discovery%20in%20Sidelink%20Relay.doc) Discussion on Relay discovery in Sidelink Relay ZTE Corporation, Sanechips discussion Rel-17

[R2-2103000](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103000%20-%20Left%20issues%20for%20SL%20discovery.docx) Left issues for SL discovery Ericsson discussion Rel-17

[R2-2103006](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103006%20Discussion%20on%20NR%20sidelink%20relay%20disovery.docx) Discussion on NR sidelink relay discovery OPPO discussion Rel-17

[R2-2103010](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103010%20NR%20SL%20Relaying%20Discovery.docx) NR Sidelink Relaying Discovery Fraunhofer IIS, Fraunhofer HHI discussion Rel-17

[R2-2103071](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103071.docx) SL Relay Discovery Aspects Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

[R2-2103085](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103085%20SL%20relay%20discovery%20message.doc) SL relay discovery message Samsung discussion Rel-17

[R2-2103205](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103205%20Discussion%20on%20sidelink%20relay%20discovery.doc) Discussion on sidelink relay discovery SHARP Corporation discussion

[R2-2103227](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103227_disc_pool.doc) Discovery resources for sidelink relaying Kyocera discussion Rel-17

[R2-2103229](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103229_discovery.doc) Relay discovery considerations Kyocera discussion Rel-17

[R2-2103236](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103236%20Discussion%20on%20relay%20discovery.docx) Discussion on relay discovery Spreadtrum Communications discussion Rel-17

[R2-2103323](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103323_Discussion%20on%20Relay%20Discovery%20Procedure.docx) Discussions on Relay discovery procedure vivo discussion Rel-17

[R2-2103389](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103389%20Relay%20Discovery%20in%20L2%20and%20L3%20U2N%20relay%20v2.0.doc) Relay Discovery in L2 and L3 U2N relay Lenovo, Motorola Mobility discussion Rel-17

[R2-2103424](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103424-%20Sidelink%20Relay%20Discoveryv2.docx) Sidelink Relay Discovery, Open Issues Beijing Xiaomi Mobile Software discussion Rel-17

[R2-2103493](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103493%20Support%20of%20discovery%20for%20sidelink%20relay_v2.docx) Support of discovery for sidelink relay Huawei, HiSilicon discussion Rel-17

[R2-2103498](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103498%20Restricted%20Sidelink%20Relay%20Discovery%20Within%20Sidelink%20Groupcast.docx) Restricted Sidelink Relay Discovery Within Sidelink Groupcast Nokia Germany discussion Rel-17 FS\_NR\_SL\_relay

[R2-2103575](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103575%20On%20Relay%20Discovery.docx) On relay discovery MediaTek Inc. discussion Rel-17

[R2-2103856](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103856%20PC5%20Radio%20link%20quality%20evaluation.doc) Evaluation of PC5 link quality based on relay discovery Apple discussion

[R2-2103992](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103992.docx) Discovery message transmission LG Electronics Inc. discussion

### 8.7.3 Relay re/selection

Re-using LTE re/selection as baseline. Including potential AS criteria for re/selection.

Summary document

[R2-2104287](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104287%20-%20Summary%20of%20AI%208.7.3%20-%20Relay%20(re)selection%20(QC).doc) Summary of Agenda Item 8.7.3 (relay selection/reselection) Qualcomm Incorporated discussion Rel-17 FS\_NR\_SL\_relay

(“Easy” proposals for block approval:)

Proposal 1: For relay (re)selection, RAN2 clarify that only the common parts of L2 and L3 relay is required to be completed by RAN#92. L2 specific design may be discussed in L2 relay agenda items in contribution driven manner.

Proposal 4: RAN2 confirm below NR relay (re)selection procedures which are same as LTE Prose relay:

1) PC5 Measurement: For relay(s) without unicast PC5 sconnection, remote UE uses RSRP measurements of sidelink discovery messages (i.e. SD-RSRP) to evaluate whether PC5 link quality of a Relay UE satisfies relay selection and reselection criterion

2) Trigger of relay selection: Triggered at remote UE when: a) direct Uu link quality is below a configured threshold for an in-coverage remote UE (in IDLE/INACTIVE and CONNECTED for L3 U2N relay; L2 case to be further discussed); or b) triggered by upper layer

3) Trigger of relay reselection: Triggered at remote UE when: a) PC5 measurement towards current relay UE is below a (pre)configured threshold; or b) Reception of an upper layer release message or similar indication from current relay UE; or c) Triggered by upper layer

4) How to choose relay UE in relay (re)selection: Remote UE searches for suitable relay UE candidates which meet all AS-layer & higher layer criteria. If multiple such candidate relay UEs available, it is up to Remote UE implementation to choose one Relay UE.

Proposal 5: Same as LTE, Uu link threshold (like threshHigh-r13), PC5 link threshold(like q-RxLevMin-r13), L3 filter coefficient for SD-RSRP/SL-RSRP (like filterCoefficient-r13) and hysteresis (like hystMax-r13 and minHyst-r13) can be provided via SIB/RRC by gNB or pre-configuration. Handling of Uu link threshold being absent can reuse LTE approach (i.e. when absence, remote UE considers condition to be met).

Proposal 6: In SD-RSRP measurement for relay (re)selection trigger and candidate relay evaluation, L3 filtering is applied across measurements on the DMRS of PSSCH transmission which carries discovery message from the concerned relay.

Proposal 8: RAN2 confirm that remote UE triggers relay reselection if PC5 RLF with current relay UE is detected by remote UE. FFS if there is any impact to other RLF handling activities.

Proposal 14: Uu quality between relay UE and gNB is not included in discovery message as additional AS criteria for relay (re)selection

Proposal 16: Include the information required for agreed additional AS criteria in discovery message.

Discussion:

OPPO think the LS in P16 should be discussed after we finalise the AS criteria. Qualcomm think this can be discussed offline.

MediaTek think item 2 in P4 is only applicable to L3 relay and there is no equivalent for L2. Qualcomm clarify it originally listed both, but there was a concern about reusing this baseline for L2, and the L2 part is reflected in P18 for offline discussion. Huawei understand for L3 RRC\_CONNECTED remote UE, there is the possibility that reselection is triggered by remote UE itself, and for L2 we have an RRC connection through the relay that needs to be switched at reselection. MediaTek wonder if we can apply the same principle to L3 and L2. Qualcomm suggest that we include both L2 and L3 relay but indicate that it does not preclude gNB-controlled reselection. OPPO prefer the original version. Huawei agree with OPPO.

Intel wonder if the word “discovery” should be included in P6. Qualcomm point out it is in the last sentence.

Ericsson think we have not discussed PC5 RLF in relation to P8. Qualcomm point out this actually was in the TR.

(Proposals for discussion:)

Proposal 18: Same as LTE, CONNECTED remote UE in L2 U2N relay can also trigger relay selection when directly Uu link quality is below a configured threshold. It doesn’t exclude the option of gNB decision on relay selection.

Proposal 12: Discuss online whether to adopt relay load as an additional criterion for relay UE (re)selection with below alternative metrics:

a. Number of PC5 connections to Remote UEs currently being actively used for relaying

b. Resource pool usage or capacity

c. Data rate at the different layers of the relay UE(s) for relaying data

d. Buffering capacity available or buffer load for relayed data on the Relay UE

e. Average time the relayed data stays within the Relay UE

f. Number of remote UEs being served by the relay UE

Proposal 13: During relay (re)selection, remote UE can be aware of serving cell ID and PLMN ID of candidate relay UEs. RAN2 discuss whether they can be specified as additional AS criteria for relay (re)selection

Proposal 15: Besides RLF, serving cell ID, PLMN ID, relay load (if they are agreed in relay reselection session) and L2/L3 relay support (if agreed in discovery session), other AS criteria are not considered in this release.

Proposal 3: For L2/L3 relay common parts of relay (re)selection, RAN2 confirm that there is no support of service continuity from AS layer perspective. gNB controlled path switch for service continuity belongs to L2 relay service continuity agenda item.

(Proposals for offline discussion:)

Proposal 2: Because gNB decision on relay selection/reselection and QoS controlled relay (re)selection are L2 relay specific design, they are not treated in relay (re)selection discussion by RAN#92

Proposal 7: RAN2 discuss which alternatives of PC5 measurement to trigger relay reselection. The discussion should consider conclusion of transmit power of discovery message made in discovery session (e.g. whether fixed power or can be configured subject to OLPC)

* Alt-1: Based on only SL-RSRP. In case of no data transmission, remote UE may use keep-alive message if available or triggered PC5-S/CSI reporting if available from relay UE to perform SL-RSRP measurement based on its implementation.
* Alt-2: Based on both SL-RSRP and SD-RSRP. If data is available, only SL-RSRP of data. In case of no data transmission, the remote UE triggers reselection based on SD-RSRP

Proposal 9: When Uu RLF is detected by relay UE, relay UE sends the indication/message, e.g., in Proposal 4-3-b to its connected remote UE(s) to trigger relay reselection.

Proposal 10: When relay performs HO to another gNB, relay UE sends the indication/message, e.g., in Proposal 4-3-b to its connected remote UE(s) to trigger relay reselection.

Proposal 11: When PC5 RLF is detected by relay UE on a PC5 unicast link towards a remote UE, relay UE sends the PC5 RLF report including available PC5 measurements of the PC5 unicast link to gNB.

Proposal 17: When relay (re)selection is triggered, the remote UE may perform cell (re)selection and relay (re)selection procedure independently. When both a suitable cell and a suitable relay are available, the remote UE can select either one based on its implementation in this release, i.e. TS 38.304 will not specify this procedure.

* [AT113bis-e][610][Relay] AS criteria for relay (re)selection (InterDigital)

Scope: Discuss P12/P13/P15 from the (re)selection summary and attempt to down-select AS criteria for (re)selection.

Intended outcome: Report in R2-2104414

Deadline: Monday 2021-04-19 1000 UTC

[R2-2104414](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104414%20-%20%5b610%5d%5bRelay%5dAS_Criteria_reselection_summaryV2.docx) Summary of [AT113bis-e][610][Relay] AS criteria for relay (re)selection (InterDigital) InterDigital discussion

Proposal 1-1: RAN2 continue to discuss further whether to consider load as an additional AS criteria, based on specific details of using number of PC5 connections/remote UEs served by the relay and/or resource pool usage/capacity at the relay UE.

Agreements:

Proposal 2-1 [easy]: For L3 relay, the use of PLMN ID and cell ID in relay (re)selection is up to SA2

Proposal 2-2 [easy]: For L2 relay, PLMN ID supported as additional AS criteria for relay (re)selection. Whether cell ID is used can be further discussed by RAN2.

Proposal 3-1 [easy]: Besides serving cell ID, PLMN ID, L2/L3 relay support (if agreed in discovery session) and relay load, other additional AS criteria are not considered in this release.

Discussion:

OPPO have some concern with P2-1; they understand that these parameters were not used in LTE and prefer to remove the “e.g.” parenthetical. InterDigital clarify this was added because of the question of whether it was applicable to cell or relay (re)selection, but they agree this would not change the import of the proposal.

CATT also have some uncertainty about the parenthetical and think there could be a mismatch between SA2 and RAN2.

Lenovo understand that it is about relay (re)selection, and the point is that the remote UE should see the serving cell of the prospective relay UE.

Nokia think instead of “up to SA2” we should ask SA2, and the question for P2-1 is whether it would be in the discovery message.

Intel agree we should ask SA2 and wonder if an LS is needed. For P3-1, they think L2/L3 relay support was not covered in the email discussion. InterDigital clarify this discussion was in the discovery scope, hence the condition in the proposal.

Lenovo think “cell ID” is not unambiguous for SA2.

OPPO think the LS is not necessary since the discovery message contents are anyway for decision by SA2. OPPO do not want to mislead SA2 by suggesting that we require new criteria compared to LTE.

Huawei think we should remove “after RAN#92” in P2-2, as they understand this is related to the prospective LS to SA2. MediaTek agree with Huawei and think we can indicate RAN2 preference to SA2.

ZTE would like to also include that we agree PLMN ID is used for L2 relay. InterDigital think we can capture the agreements we have. Qualcomm agree with ZTE that we can include this, and think we don’t need any answer from them. OPPO think we should not include the L2 agreements because we do not have consensus on whether the criteria will come from discovery signalling or SI. ZTE point out we agreed that the AS criteria identified should be included in the discovery message.

* LS to SA2 to indicate that RAN2 leave to SA2 whether to use PLMN ID and cell ID for L3 relay (no answer needed).
* [Post113bis-e][6xx][Relay] LS to SA2 on PLMN ID and cell ID for L3 relay (InterDigital)

Scope: Draft an LS to SA2 indicating our agreements on criteria for relay (re)selection, and that RAN2 leave to SA2 whether/how to use PLMN ID and cell ID for L3 relay. No answer is needed (just “take into account”).

Intended outcome: Approved LS

Deadline: Short

* [Post113bis-e][6xx][Relay] Definition of relay load criterion (Ericsson)

Scope: Collect definitions of the relay load criterion and downselect candidates. Whether to use relay load as a criterion will not be discussed in this scope.

Intended outcome: Report to next meeting

Deadline: Long

* [AT113bis-e][611][Relay] Remaining proposals on relay (re)selection (Qualcomm)

Scope: Discuss the proposals for discussion from the (re)selection summary and converge where possible.

Intended outcome: Report in R2-2104415

Deadline: Monday 2021-04-19 1000 UTC

[R2-2104415](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104415%20-%20Summary%20of%20offline%23611%20-%20Remaining%20proposals%20on%20relay%20(re)selection%20(Qualcomm).doc) Remaining proposals on relay (re)selection Qualcomm Incorporated discussion

[Proposals for block agreement]

Proposal 1: For L2/L3 relay common parts of relay (re)selection, RAN2 confirm that there is no support of service continuity from AS layer perspective

Proposal 2: gNB controlled relay (re)selection” or “gNB controlled path switch” belong to L2 relay service continuity agenda item, and they are not treated in relay (re)selection discussion by RAN#92

Proposal 3: QoS controlled relay (re)selection is not treated in relay (re)selection discussion by RAN#92

Proposal 6: When PC5 RLF is detected by relay UE on a PC5 unicast link towards a remote UE, relay UE in RRC\_CONNECTED sends the PC5 RLF indication to gNB (as supported in R16 specification).

Proposal 4: When Uu RLF is detected by relay UE, relay UE may send a PC5-S message (similar to LTE) to its connected remote UE(s) and this message may trigger relay reselection. FFS other indication/message can also be used for notification.

Proposal 5: When relay performs HO to another gNB, relay UE may send a PC5-S message (similar to LTE) to its connected remote UE(s) and this message may trigger relay reselection. FFS other indication/message can also be used for notification

Discussion:

Xiaomi would like to clarify in P5 that HO means legacy HO (not DAPS). Qualcomm note it says the relay UE \*may\* send the indication, i.e. the relay UE can take a decision on this. Chair understands we do not currently have sidelink with DAPS. Qualcomm clarify the point is that there is no group mobility, so even for DAPS the relay UE would need to release its remote UE(s).

Xiaomi agree we do not support group mobility, but think in the DAPS case it is not needed before the source release.

Ericsson think the WID is scoped to the single gNB case, so when there is a HO the PC5 connection should be released, and sending an indication is fine as well (for L2 case).

Nokia understand P5 is for both L2 and L3, and for L3 there is no need to release; they want to clarify if Ericsson’s comment is for L2. Ericsson clarify it is for L2.

Lenovo are OK with the current wording. OPPO agree. Apple agree.

Qualcomm clarify the use of the word “may” was intentional and we can take further comments to understand in which case this message is needed.

[Proposals for discussion]

Proposal 7: RAN intend that the remote UE may perform cell (re)selection and relay (re)selection procedure independently. FFS whether any exceptional case(s) for both L2 and L3 relay where this may not be possible.

Proposal 8: If both a suitable cell and a suitable relay are available, the remote UE can select either one (or both, for L3 relay only) based on its implementation in this release (i.e. TS 38.304 will not specify any additional procedure for selecting between the cell and the relay). FFS whether any enhancements to the cell (re)selection procedure for L2 relay.

Discussion:

Lenovo are OK with these proposals but want to make sure that current principles (e.g. best cell principle) are still kept.

vivo think the option of selecting both by L3 relay in P8 was added at the last minute, and they want to clarify the meaning: the L3 relay can select both a cell and a relay? Qualcomm indicate this is aligned with L3 relay in LTE, and this is possible because relaying does not terminate in the gNB.

Xiaomi wonder what the “FFS whether different for L2 relay” means. Qualcomm clarify some companies felt there could be enhancements for the L2 case.

InterDigital think the arrangement of the L3 relay comment can be clarified. They understand the whole agreement in P8 is only for L3. Qualcomm indicate the goal is a unified behaviour for L2/L3. Huawei understand that “either one” is for L2/L3, “both” is only for L3. On P7, they think the FFS should also apply to L3.

Nokia think P7 could be left out; they are OK with P8 but think separate sentences for L2/L3 could be clearer.

Ericsson think in P8, the “i.e.” parenthetical excludes the FFS. Qualcomm clarify that adding a new priority could be included in 38.304 under the FFS without adding a new procedure.

Lenovo think the procedures may not be fully independent, e.g. some relays may be on a cell which is not suitable for the remote. They also think there may be cases where the remote needs a specific feature from the serving cell and excludes some relays based on that.

The following documents will not be individually treated

[R2-2102692](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102692%20-%20Discussion%20on%20relay%20(re)selection.doc) Discussion on relay (re)selection Qualcomm Incorporated discussion

[R2-2102699](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102699_Sidelink%20Relay%20(Re)Selectoin.docx) Sidelink Relay (Re)Selection CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2102807](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102807%20(R17%20SL%20Relay%20SI%20AI873%20Relay%20selection).doc) Relay selection and reselection InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2102960](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102960%20Further%20considerations%20on%20relay%20(re)selection%20-%20final.docx) Further considerations on relay (re)selection ETRI discussion

[R2-2102977](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102977%20Discussion%20on%20Relay%20selection%20in%20Sidelink%20Relay.doc) Discussion on Relay selection in Sidelink Relay ZTE Corporation, Sanechips discussion Rel-17

[R2-2103001](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103001%20-%20Aspects%20for%20SL%20relay%20selection%20and%20reselection.docx) Aspects for SL relay selection and reselection Ericsson discussion Rel-17

[R2-2103007](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103007%20Discussion%20on%20NR%20sidelink%20relay%20UE%20(re-)selection.docx) Discussion on NR sidelink relay (re-)selection OPPO discussion Rel-17

[R2-2103009](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103009-NR%20Sidelink%20Relay%20(Re-)Selection.docx) NR Sidelink Relay (Re-)Selection Fraunhofer IIS, Fraunhofer HHI discussion Rel-17

[R2-2103086](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103086%20SL%20relay%20selection%20and%20reselection%20triggering%20criteria.doc) SL relay selection and reselection triggering criteria Samsung discussion Rel-17

[R2-2103237](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103237%20Discussion%20on%20relay%20selection%20and%20reselection.doc) Discussion on relay selection and reselection Spreadtrum Communications discussion Rel-17

[R2-2103311](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103311%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 R2-2101211

[R2-2103324](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103324_Discussion%20on%20Relay%20(re-)selection%20procedure.docx) Discussions on Relay (re-)selection procedure vivo discussion Rel-17

[R2-2103390](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103390%20Relay%20(re)selection%20for%20L2%20and%20L3%20U2N%20case_v1.1.doc) Relay (re)selection for L2 and L3 U2N case Lenovo, Motorola Mobility discussion Rel-17

[R2-2103422](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103422-Sidelink%20Relay%20Reselection.docx) Sidelink Relay Reselection and Selection, proposal for outline procedure Beijing Xiaomi Mobile Software discussion Rel-17

[R2-2103423](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103423%20NR%20sidelink%20relay%20(re)selection.docx) NR sidelink relay (re)selection MediaTek Inc. discussion

[R2-2103584](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103584.doc) Relay (re)selection Sony Europe B.V. discussion Rel-17

[R2-2103667](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103667%20RelaySelection.docx) Discussion on relay selection and reselection Nokia, Nokia Shanghai Bell discussion Rel-17

[R2-2103717](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103717%20Consideration%20on%20Relay%20selection%20and%20reselection.docx) Consideration on Relay selection and reselection CMCC discussion Rel-17 FS\_NR\_SL\_relay

[R2-2103739](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103739_Relay_selection_Intel.docx) Discussion on SL Relay (re)selection Intel Corporation discussion Rel-17

[R2-2103884](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103884_sidelink%20relay%20reselection.docx) Discussion on sidelink relay (re)selection Apple discussion Rel-17

[R2-2103993](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103993.docx) Relay UE selection criterion using SL-unicast and discovery message LG Electronics Inc. discussion Rel-17

[R2-2103994](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103994.docx) Relay (re-)selection and path switching LG Electronics Inc. discussion Rel-17

[R2-2103995](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103995.docx) Discovery message contents and relay selection criteria LG Electronics Inc. discussion Rel-17

[R2-2104130](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104130.docx) Discussion on relay selection and reselection Huawei, HiSilicon discussion Rel-17 FS\_NR\_SL\_relay

[R2-2104262](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104262%20-%20Relay%20UE%20load%20as%20an%20additional%20AS%20criterion%20for%20relay%20(re-)selection.docx) Relay UE load as an additional AS criterion for relay (re-)selection Philips International B.V. discussion Rel-17 FS\_NR\_SL\_relay

### 8.7.4 L2 relay specific topics

No documents should be submitted to 8.7.4. Please submit to 8.7.4.x.

#### 8.7.4.1 Control plane procedures

Including connection management, SI delivery, paging, access control for remote UE. Connection management topics will be prioritised.

Summary document

[R2-2104503](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104503%20Summary%20of%208.7.4.1-v3.doc) Summary document of AI 8.7.4.1 ZTE discussion

* [AT113bis-e][603][Relay] Proposals from summary of agenda item 8.7.4.1 (ZTE)

Scope: Continue discussion of the summary of AI 8.7.4.1 and try to reach agreeable proposals.

Intended outcome: Report in R2-2104405

Deadline: Friday 2021-04-16 1000 UTC

[R2-2104405](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104405_Summary%20report%20of%20%5bAT113bis-e%5d%5b603%5d%5bRelay%5d%20-final.doc) [AT113bis-e][603][Relay] Proposals from summary of agenda item 8.7.4.1 (ZTE) ZTE discussion

[Proposals with potential cross-group interactions]

Proposal 3: [22/23] [Cross group] [Easy] RAN2 send an LS to SA3 to check if there is any security issue on exposing the 5G-S-TMSI/I-RNTI of remote UE to relay UE over PC5/Uu interface suppose 5G-S-TMSI/I-RNTI of remote UE are to be provided to relay UE.

Discussion:

Ericsson think we should have the LS and this has been an issue since the SI phase.

ASUSTeK think exposure by the gNB over the Uu interface could also be a concern.

* [AT113bis-e][6xx][Relay] LS to SA3 on UE ID exposure over PC5/Uu (OPPO)

Scope: Draft an LS to SA3 to check if there is any security issue on exposing the 5G-S-TMSI/I-RNTI of remote UE to relay UE over PC5/Uu interface suppose 5G-S-TMSI/I-RNTI of remote UE are to be provided to relay UE.

Intended outcome: Approved LS

Deadline: Short

Proposal 5: [23/23] [Cross group] [Easy] The remote UE should perform TAU/RNAU procedure while in RRC\_INACTIVE and RRC\_IDLE. No LS to be sent from this meeting to SA2/ CT1/RAN3 on the remote UE’s TAU/RNAU procedure.

Discussion:

Ericsson are OK with the proposal.

[Proposals for potential block agreement]

Proposal 6-1: [20/23] [Easy] For the delivery of remote UE’s SRB0 RRC message, specified (fixed) configuration is used for the configuration of PC5 RLC channel. FFS for the Uu RLC channel.

Proposal 6-2: [21/23, 22/23] [Easy] For the delivery of remote UE’s SRB1 RRC message other than RRCResume and RRCReestablishment message, network configuration via dedicated signalling is used for the configuration of PC5 RLC channel and Uu RLC channel.

Proposal 6-3: [23/23] [Easy] For the delivery of remote UE’s SRB1 RRC message such as RRCResume and RRCReestablishment message, default configuration is used for the configuration of PC5 RLC channel which can be reconfigured by network. FFS for Uu RLC channel.

Proposal 6-4: [21/23, 22/23] [Easy] For the delivery of remote UE’s SRB2 RRC message, network configuration via dedicated signalling is used for the configuration of PC5 RLC channel and Uu RLC channel.

Proposal 6-5: [23/23, 23/23] [Easy] For the delivery of remote UE’s Uu DRB packet, network configuration via dedicated signalling is used for the configuration of PC5 RLC channel and Uu RLC channel.

Proposal 6-6: [22/23] [Easy] For the PC5 RLC channel configuration, only the RLC/LCH configuration is provided to the relay UE and remote UE.

Proposal 6-7: [22/23] [Easy] For the Uu RLC channel configuration, only the RLC/LCH configuration is provided to the relay UE.

Proposal 6-8: [23/23] [Easy] For the remote UE’s SRB1/SRB2 configuration, only the Uu PDCP configuration is provided to the remote UE.

Proposal 6-9: [23/23] [Easy] For the remote UE’s DRB configuration, only the Uu PDCP/SDAP configuration is provided to the remote UE.

Proposal 9-1: [23/23] [Easy] For RRC\_Connected remote UE, RAN2 confirm that DedicatedSIBRequest procedure is re-used for the Remote UE to request the SI via relay UE.

Proposal 9-2: [22/23] [Easy] For RRC\_Idle/INACTIVE remote UE, remote UE informs relay UE on requested SIB type(s) via PC5 RRC message. Then, relay UE triggers legacy on-demand SI acquisition procedure according to its own RRC state (if needed) and sends the acquired SIB to remote UE.

Proposal 10-2: [23/23] [Easy] PC5-RRC message can be used to carry the system information forwarding via PC5.

Proposal 12: [19/23] [Easy] Suppose a relay UE needs to monitor paging for a remote UE, the relay UE should monitor all POs for the remote UE as a baseline.

Proposal 13: [23/23] [Easy] Unicast can be used for the paging forwarding via PC5.

WA: Proposal 15: [23/23] [Easy] Remote UE can reuse legacy access control and no need to enhance the access control procedure of Remote UE. FFS whether the relay UE performs UAC for itself.

Discussion:

LG wonder on P9-2, if the relay UE already has the needed SIB if it should still trigger the procedure.

Lenovo wonder about P13 if it means “only unicast” or “at least unicast”. ZTE think the majority supported use of unicast, but “can be used” would be OK.

Ericsson note that on P9-2, the on-demand procedure is different in different RRC states.

Nokia think P15 might be a bit strange when we haven’t agreed if we need to have UAC for relay/remote independently. They would prefer to discuss access control issues collectively.

Xiaomi think the remote UE has to do UAC, as a baseline, and we just need to discuss whether the relay UE does UAC; so they understand that P15 should be OK. Nokia are concerned about the case of double access checking for the same request, and think the issue should be checked with SA2 before agreeing. Their concern is that this may not be RAN2 responsibility and we need to be concerned about how it fits into the whole system.

ZTE think we can agree P15 and discuss the further details of UAC under the FFS point.

Qualcomm think we captured in the SI that the relay UE does not perform UAC for the remote UE’s data.

The following documents will not be individually treated

[R2-2102693](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102693%20-%20RRC%20management%20procedures%20of%20L2%20U2N%20relay.doc) RRC management procedures of L2 U2N relay Qualcomm Incorporated discussion

[R2-2102695](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102695%20-%20System%20information%20paging%20delivery%20and%20UAC%20in%20L2%20U2N%20relay.doc) System information, paging delivery and UAC in L2 U2N relay Qualcomm Incorporated discussion

[R2-2102700](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102700%20Control%20Plane%20Procedures%20of%20L2%20Relay.docx) Control Plane Procedures of L2 Relay CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2102701](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102701_Service%20Continuity%20for%20L2%20U2N%20Relay.docx) Service Continuity for L2 U2N Relay CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2102747](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102747%20-%20Discussion%20on%20Control%20Plane%20Aspects%20for%20L2%20Relay_v2.docx) Discussion on Control Plane Aspects for L2 Relay OPPO discussion Rel-17 Late

[R2-2102779](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102779%20Connection%20establishment%20for%20L2%20UE-to-Network%20Relay.docx) Connection establishment for L2 UE-to-Network Relay MediaTek Inc. discussion Rel-17

[R2-2102780](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102780%20Further%20details%20on%20System%20Information%20Delivery.docx) Further details on System Information Delivery MediaTek Inc. discussion Rel-17

[R2-2102809](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102809%20(R17%20SL%20Relay%20SI_AI8741%20Connection_management).doc) Connection Management for L2 UE to NW Relays InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2102810](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102810%20(R17%20SL%20Relay%20SI_AI8741%20CP%20Procedures).doc) Control Plane Procedures for L2 UE to NW Relays InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2102891](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102891%20-%20Left%20issues%20on%20RRC%20procedure%20for%20L2%20U2N%20Relay.docx) Left issues on RRC procedure for L2 U2N Relay OPPO discussion Rel-17

[R2-2102968](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102968%20Connection%20control%20on%20L2%20relay.doc) Connection on L2 relay Xiaomi communications discussion

[R2-2102969](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102969%20Discussion%20on%20resource%20allocation%20for%20remote%20UE.doc) Discussion on resouce allocation for remote UE Xiaomi communications discussion

[R2-2102974](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102974%20The%20connection%20management%20of%20SL%20relay.doc) The connection management of SL relay ZTE Corporation, Sanechips discussion Rel-17

[R2-2102975](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102975%20Discussion%20on%20system%20information%20paging%20and%20access%20control.doc) Discussion on system information paging and access control ZTE Corporation, Sanechips discussion Rel-17

[R2-2103087](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103087%20Connection%20management%20in%20L2%20U2N%20relay.doc) Connection management in L2 U2N relay Samsung discussion Rel-17

[R2-2103088](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103088%20System%20information%20delivery%20via%20relay%20UE.doc) System information delivery via relay UE Samsung discussion Rel-17

[R2-2103203](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103203%20U2N%20connection%20establishment.docx) UE to Network Relay Connection Establishment Futurewei discussion Rel-17

[R2-2103231](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103231_L2_relaying.doc) RRC state transitions in L2 relaying Kyocera discussion Rel-17

[R2-2103310](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103310%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 R2-2101325

[R2-2103325](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103325_RRC%20Connection%20Management%20for%20L2%20relay.docx) RRC Connection Management for L2 relay vivo discussion Rel-17

[R2-2103326](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103326_Control%20Plane%20procedure%20for%20L2%20SL%20Relay.docx) Control Plane procedure for L2 SL Relay vivo discussion Rel-17

[R2-2103328](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103328_Discussion%20on%20L2%20and%20L3%20relay%20co-existence.docx) Discussions on L2 and L3 relay co-existence vivo discussion Rel-17

[R2-2103458](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103458%20Discussion%20on%20RRC%20procedures%20for%20U2N%20Relay.docx) Discussion on RRC procedures for U2N Relay ASUSTeK discussion Rel-17

[R2-2103482](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103482%20SIB%20Handling%20in%20Sidelink%20UE-to-Nwk%20Relay.docx) SIB Handling in Sidelink UE-to-Nwk Relay Nokia Germany discussion Rel-17 FS\_NR\_SL\_relay

[R2-2103662](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103662-%20Discussion%20on%20control%20plane%20procedures%20for%20L2%20sidelink%20relay.docx) Discussion on control plane procedures for L2 sidelink relay Ericsson discussion Rel-17

[R2-2103663](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103663-%20Discussion%20on%20service%20continuity%20for%20L2%20sidelink%20relay.docx) Discussion on service continuity for L2 sidelink relay Ericsson discussion Rel-17

[R2-2103718](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103718%20System%20information%20delivery%20for%20L2%20U2N%20Relay.docx) System information delivery for L2 U2N Relay CMCC discussion Rel-17 FS\_NR\_SL\_relay

[R2-2103738](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103738_SLRelay_ControlPlane_Intel.docx) Control plane procedures for L2 U2N relaying Intel Corporation discussion Rel-17

[R2-2103742](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103742%20Monitoring%20Paging%20by%20a%20U2N%20Relay.doc) Monitoring Paging by a U2N Relay Lenovo, Motorola Mobility discussion Rel-17

[R2-2103744](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103744%20SI%20acquisition,%20CN%20Registration%20and%20RNAU.doc) SI acquisition, CN Registration and RNAU Lenovo, Motorola Mobility discussion

[R2-2103857](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103857%20QOS%20for%20Layer%202%20UE-to-NW%20relay.doc) Discussion on QoS mechanism for Layer 2 UE-to-NW relay Apple discussion

[R2-2103956](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103956%20-%20SL%20Relay%20CP.docx) Control plane multi-connectivity for NR Sidelink Relay UE AT&T discussion

[R2-2103996](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103996.docx) L2 relay QoS handling procedure LG Electronics Inc. discussion Rel-17

R2-2104126 Service continuity of L2 U2N relay Qualcomm communications-France discussion Late

[R2-2104131](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104131.docx) Discussion on the CP procedures for L2 Relay Huawei, HiSilicon discussion Rel-17 FS\_NR\_SL\_relay

[R2-2104132](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104132.docx) Discussion on path switch for L2 UE to NW Relay Huawei, HiSilicon discussion Rel-17 FS\_NR\_SL\_relay

[R2-2104245](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104245-discussion%20on%20Paging%20and%20SI%20delivery.doc) discussion on Paging and SI delivery for L2 U2N relay ETRI discussion Rel-17

#### 8.7.4.2 Protocol architecture

Including protocol stack aspects and functions of the adaptation layer. This AI will be treated on a time-available basis, prioritising any topics that may require coordination with other groups.

Summary document

[R2-2104505](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104505%20summary%208.7.4.2.docx) Summary document for AI 8.7.4.2 Futurewei discussion

* [AT113bis-e][604][Relay] Proposals from summary of agenda item 8.7.4.2 (Futurewei)

Scope: Continue discussion of the summary of AI 8.7.4.2 and try to reach agreeable proposals.

Intended outcome: Report in R2-2104406

Deadline: Friday 2021-04-16 1000 UTC

[R2-2104406](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104406%20604Relay%20Protocol%20Architecture%20AI%208.7.4.2%20summary.docx) Report of [AT113bis-e][604][Relay] Proposals from summary of agenda item 8.7.4.2 Futurewei discussion

Proposal 3: For both DL and UL transmission of Uu radio bearers other than SRB0, identity information of a remote UE and its Uu radio bearer are included in the header of adaptation layer over Uu. FFS for SRB0. FFS if the presence of adaptation layer header can be configurable. (24/24)

Proposal 3a: The radio bearer ID in the adaptation layer header is the Uu radio bearer ID of the remote UE. (23/24)

Proposal 3b: The UE ID in the adaptation layer header is a local, temporary remote UE ID. FFS whether the local, temporary remote UE ID is assigned by the relay UE, or the serving gNB of the relay UE. (23/24)

Proposal 3c: Mapping is done at Relay UE between PC5 RLC bearer IDs, identity information of remote UE and Uu radio bearer, and Uu RLC bearer IDs.

Proposal 4: Send LS to inform SA3 of RAN2 decision of disclosing in adaptation layer header temporary UE ID, configured by the serving gNB or by the relay UE, and to request SA3 feedback if there is security issue.

Discussion:

P4:

Nokia have some concern on sending the LS before we know what the temporary ID is. Samsung have the same view.

Ericsson think the LS is needed because the local ID may be used for a long time.

vivo also think the LS is needed, but they agree with Nokia that we should first decide some details and then inform SA3.

Huawei think the LS is not premature; we understand that the ID is a local temporary ID and can give them that guidance. Since cross-group issues are prioritised we should not delay it.

Samsung think there is actually some potential damage from asking SA3, because they might make assumptions and constrain our solution. E.g. they are not sure if Ericsson are right that it will be used for a long time.

MediaTek see some benefit to checking with SA3 to avoid delaying our work.

OPPO are fine with sending the LS, and point out that we have an LS to SA3 on the paging ID. Intel and Apple are OK to send the LS.

Huawei suggest we consider in the existing LS discussion whether to include this question, or include our agreements from this discussion in the LS.

The following documents will not be individually treated

[R2-2102694](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102694%20-%20Adaptation%20layer%20and%20E2E%20QoS%20management%20of%20L2%20U2N%20relay.doc) Adaptation layer and E2E QoS handling of L2 U2N relay Qualcomm Incorporated discussion

[R2-2102702](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102702_Study%20on%20Adaption%20Layer%20for%20L2%20U2N%20Relay.docx) Study on the Adaption Layer for L2 U2N Relay CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2102781](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102781%20Adaptation%20layer%20for%20PC5%20at%20L2%20UE-to-Network%20Relay.docx) Adaptation layer for PC5 at L2 UE-to-Network Relay MediaTek Inc. discussion Rel-17

[R2-2102808](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102808%20(R17%20SL%20Relay%20WI_AI8742%20Protocol%20Architectures)%20.doc) Discussion on L2 Relay Architecture and QoS InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2102892](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102892%20-%20Left%20issues%20on%20adaptation%20layer%20for%20L2%20U2N%20Relay.docx) Left issues on adaptation layer for L2 U2N Relay OPPO discussion Rel-17 Late

[R2-2102976](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102976%20Discussion%20on%20SL%20relay%20protocol%20architecture.doc) Discussion on SL relay protocol architecture ZTE Corporation, Sanechips discussion Rel-17

[R2-2103002](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103002%20-UP%20aspects%20on%20Layer%202%20SL%20relay.docx) UP aspects for Layer 2 SL relay Ericsson discussion Rel-17

[R2-2103235](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103235.doc) Discussion on L2 Relay Architecture and QoS Spreadtrum Communications discussion Rel-17

[R2-2103327](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103327_Adaptation%20Layer%20for%20L2%20SL%20Relay.docx) Adaptation Layer for L2 SL Relay vivo discussion Rel-17

[R2-2103459](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103459%20Discussion%20on%20presence%20of%20adaptation%20layer%20header%20for%20U2N%20Relay.docx) Discussion on presence of adaptation layer header for U2N Relay ASUSTeK discussion Rel-17

[R2-2103494](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103494%20Adaptation%20layer%20functionalities%20for%20L2%20U2N%20relay_v3.docx) Adaptation layer functionalities for L2 U2N relay Huawei, HiSilicon discussion Rel-17

[R2-2103514](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103514%20Adaptation%20layer%20and%20other%20protocol%20stack%20aspects%20for%20L2%20relaying%20-r2.doc) Adaptation layer and other protocol stack aspects for L2 relaying Samsung Electronics GmbH discussion

[R2-2103719](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103719%20PC5%20adaption%20layer%20for%20L2%20U2N%20relay.docx) PC5 adaption layer for L2 U2N relay CMCC discussion Rel-17 FS\_NR\_SL\_relay

[R2-2103720](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103720%20Consideration%20on%20Uu%20adaption%20layer.docx) Consideration on Uu adaption layer CMCC discussion Rel-17 FS\_NR\_SL\_relay

[R2-2103737](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103737_SLRelay_adaptation_layer_Intel.docx) Adaptation layer design for L2 U2N relaying Intel Corporation discussion Rel-17

## 8.11 NR positioning enhancements

(NR\_XYZ\_enh-Core; leading WG: RAN1; REL-17; WID: RP-210903)

Time budget: 1.5 TU

Tdoc Limitation: 5 tdocs

Email max expectation: 5-6 threads

Support for BDS B2a, BDS B3I signal and support for NavIC to NR is postponed to a later meeting. Input on this is not expected. Further instructions may be added to this version.

### 8.11.1 Organizational

Rapporteur input. Incoming LS etc. This AI is reserved for rapporteur and organizational inputs; documents in this AI do not count towards the tdoc limitation.

[R2-2102959](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102959%20NR_POS_WP_v08.docx) Work plan on Rel-17 positioning Work item Intel Corporation, CATT, Ericsson discussion Rel-17 NR\_pos\_enh

* Noted

Running CR rapporteurs:

1 BDS (38.305, 36.305, 37.355, 38.331/36.331 (if broadcast is supported)): CATT for all

2 NavIC (38.305, 38.331 (if broadcast is supported)):

- 38.305 Huawei

- 38.331 Ericsson

3 Integrity (38.305, 36.305, 37.355, 38.331/36.331 (if broadcast is supported)):

- 38.305 InterDigital

- 36.305 InterDigital

- 37.355 Qualcomm

- 38.331 Ericsson

- 36.331 Huawei

4 RAT dependent:

- 38.305: Intel

- Capability discussion (include changes for 38.306, 38.331 and 37.355): Intel

- 37.355: Qualcomm

- 38.331 (except capability part): Ericsson

- User plane (if any): Huawei

5 Merged version, i.e. the version submitted to RANP:

- 38.305: Intel

- Capability discussion (include 38.306 and 38.331 changes): Intel (may be merged into Mega Capability CR as R16)

- 37.355: Qualcomm

- 38.331 (except capability part): Ericsson

- 36.305: CATT

- 36.331: Huawei

- User plane (if any): Huawei

[R2-2102665](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102665_S2-2102048.docx) LS on Scheduling Location in Advance to reduce Latency (S2-2102048; contact: Qualcomm) SA2 LS in Rel-17 5G\_eLCS\_ph2 To:RAN1, RAN2 Cc:RAN3

* Noted (can reply from the latency discussion)

### 8.11.2 Latency

Enhancements of signalling, and procedures for improving positioning latency of the Rel-16 NR positioning methods, for DL and DL+UL positioning methods.

Summary document

[R2-2104498](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104498_(summary%20latency%20reduction%20AI).docx) Summary of Agenda Item 8.11.2: Positioning Latency Enhancements Qualcomm Incorporated discussion

Proposal 1: Send a reply LS to SA2 confirming that RAN2 will add support for a scheduled location time as part of Rel-17 and as defined in SA2 CR0151 to 23.273 (S2-2102047).

Discussion:

Nokia think we need some technical discussion of the solution in the SA2 CR, and they have some questions; e.g. on the definition of the scheduled location time, they understand that in the terminology of the figures it would be time T+t2, but some of the text indicates that it is the time T when the measurements take place. They also think it is not clear whether the measurement is considered “obtained” when taken by the UE or delivered to the LMF.

Ericsson wonder what the time units would be, and think we may need some more detail from SA2.

CATT think it is not clear if RAN2 need to support this approach only at the LMF or in LPP. However, they consider that the SA2 CR is a requirement and we need to figure out how to support it, and we can reply later.

Huawei understand that SA2 are just asking for confirmation of feasibility from RAN2, and based on the current contributions there seems to be no blocking issue. In response to Nokia’s question about the details, they agree there may be some inaccuracies in the CR, and questions can be included in the reply, but they think a reply is needed. Huawei agree with CATT’s point that the SA2 CR requires us to support it.

Intel have the same view as Huawei and think the SA2 solution is aligned with our objectives, so we can reply. They consider that the questions raised are stage 3 details that we can ask SA2 about, and wrt the scheduled location time, they think it is clear in the SA2 CR that it is defined as the time T when the preparation phase ends and the execution phase starts.

Xiaomi wonder if the scheduled location time means the measurements should be performed at time T, and are not sure that RAN2 can guarantee this e.g. if there are many UEs scheduled together; they think we can raise this issue in a reply LS.

Lenovo are generally fine with the proposal to send an LS, but they think there are some unclear aspects, e.g. would there be multiple T values if there are multiple clients?

Nokia think we can reply to SA2, but we need to understand their CR. They think there is contradictory content in the CR, but they agree that clarifications can be sought from SA2.

* Will reply to SA2 from RAN2 pov; questions can be discussed offline.
* [AT113bis-e][612][POS] LS to SA2 on scheduled location time (Qualcomm)

Scope: Draft an LS to SA2 indicating that RAN2 intend to support a scheduled location time. Questions for clarification on the SA2 CR can be discussed.

Intended outcome: Approved LS in R2-2104587

Deadline: Tuesday 2021-04-20 0800 UTC

Proposal 2: Continue evaluation of the RAN specification impacts for supporting a scheduled location time as defined in SA2 CR0151 to 23.273 (S2-2102047) including the following options:

(a) There are no RAN Stage3 specification changes required for supporting a scheduled location time

(b) The scheduled location time can be defined in relation to the reception of a measurement request message; e.g., LPP Request Location Information

(c) The scheduled location time is provided in location request messages and/or SRS configuration messages

- FFS the format for the scheduled location time T

- FFS any additional "QoS information" which may need to be conveyed together with the scheduled location time T

Discussion:

CATT think we need to discuss the format of the location time. OPPO think this can be discussed when we get more information from SA2.

Huawei would like to understand the difference between (b) and (c); at first reading it seems to be that the time is carried in an LPP message vs. LCS message. Qualcomm indicate that both interpretations were included in contributions: in option (b) the time is defined relative to when a message is received, and in option (c) it is provided explicitly in a message.

vivo think there are a lot of open questions on P2 and P3 and we may need to discuss offline.

Proposal 3: Continue evaluation of the signalling and procedures to support preconfiguration of assistance data to the UE during the location preparation phase including the following aspects:

(a) Existing LPP/NRPPa and RRC procedures can be utilized for pre-configuration of positioning assistance data for measurements to the UE.

(b) New NRPPa/RRC procedures can be defined for pre-configuration of positioning assistance data for measurements to the UE.

(c) Definition of procedures for retaining and use of (one or more) preconfigured assistance data sets at the UE.

Proposal 6: With regard to latency reduction related to the measurement gaps postpone the RAN2 discussion until more input/agreements from RAN1/RAN4 are available.

* Agreed

Proposal 9: With regard to the granularity of the LPP Response Time and LPP Reporting Interval, RAN2 should evaluate feasible/sensible values which can be supported, also taking any potential latency enhancements from this Work Item into account (e.g., any latency improvements on PHY measurements (RAN1), requirements from RAN4, etc.).

Discussion:

Qualcomm think this is a stage 3 aspect and we will get to an answer in the course of our work.

CATT support P9.

Intel agree with Qualcomm and think we will see the needed granularity based on the solutions we evaluate.

[Proposals inviting further contributions]

Proposal 4: With regard to lower-layer triggered requesting of measurements, interesting companies are encouraged to provide a more detailed end-to-end solution description of the proposed procedures, which should also allow an evaluation of the latency benefits and complexity, etc.

Proposal 5: With regard to prioritization of location measurements and reports, interesting companies are encouraged to provide a more detailed end-to-end solution description of the proposed procedures/methods/solutions, which should also allow an evaluation of the latency benefits and complexity, etc.

Discussion:

Intel think P4/P5 should be discussed in RAN1 first.

Proposal 7: With regard to configured UL grant for location reports, interesting companies are encouraged to provide a more detailed end-to-end solution description of the proposed procedures, which should also allow an evaluation of the latency benefits and complexity, etc.

Proposal 8: With regard to storing UE positioning capabilities in an LMF/AMF, interesting companies are encouraged to contribute to the ongoing SA2 discussion. RAN2 should await more progress in SA2 for determining any RAN2 impacts.

Discussion:

Intel think P7/P8 are out of our scope.

Lenovo understand that the CG solution will have relevance to the RRC\_INACTIVE state and they would like to look at it from both RRC\_CONNECTED and RRC\_INACTIVE. Ericsson have a similar view.

[R2-2104586](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104586_(ED612_LS_to_SA2_LocationTime).docx) Summary of [AT113bis-e][612][POS] LS to SA2 on scheduled location time Qualcomm Incorporated discussion FS\_NR\_pos\_enh

* Noted without presentation

[R2-2104587](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104587_(Response%20LS%20to%20SA2).docx) [draft] Response LS on Scheduling Location in Advance to reduce Latency Qualcomm Incorporated LS out To:SA2 Cc:RAN1, RAN3

Xiaomi think we did not conclude that the scheduled location time impacts signalling, and in the first question we should delete “as this impact what is signalled to UE and/or NG-RAN”.

Nokia think the phrase is not incorrect but would be OK to delete.

Qualcomm think the sentence is incomplete if we delete it, but we could say “as this \*may\* impact what is signalled”. Xiaomi would be OK with this change.

Huawei think the WI code is wrong in the LS, and wonder if a Rel-17 WI code has been allocated yet. Qualcomm think NR\_pos\_enh is correct. Can be checked by MCC.

Intel understand that a WI code was allocated.

OPPO have a concern with bullet 4; they do not agree that the subsequent reporting intervals are equal to the scheduled location time. Qualcomm think it is written in the SA2 CR that the scheduled location time applies only to the first report, and we are asking if the subsequent reports can have separate location times; they think SA2 can correct us if we have a misunderstanding.

* “as this impact what is signalled to UE and/or NG-RAN” to be replaced by “as this may impact what is signalled to UE and/or NG-RAN”.
* MCC are asked to check the WI code.
* Approved with this change as R2-2104420

The following documents will not be individually treated

[R2-2102789](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102789%20Discussion%20on%20latency%20enhancement%20for%20R17%20positioning.docx) Discussion on latency enhancement for R17 positioning vivo discussion FS\_NR\_pos\_enh

[R2-2102849](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102849.docx) Consideration on latency reduction solutions Intel Corporation discussion Rel-17 NR\_pos\_enh

[R2-2102925](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102925%20Consideration%20on%20Latency%20Optimization%20of%20Assistance%20Data.docx) Consideration on Latency Optimization of Assistance Data CATT discussion Rel-17 NR\_pos\_enh

[R2-2103131](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103131%20Positioning%20enhancements%20on%20latency%20reduction.doc) Positioning enhancements on latency reduction Xiaomi discussion

[R2-2103144](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103144%20Consideration%20of%20the%20latency%20reduction%20regarding%20the%20scheduling%20the%20localization%20in%20advance.doc) Consideration of the latency reduction regarding the scheduling the localization in advance OPPO discussion Rel-17

[R2-2103382](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103382_PosLatencyReduction_LenMM.docx) Positioning Latency Reduction Enhancements Lenovo, Motorola Mobility discussion Rel-17

[R2-2103541](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103541%20Discussion%20on%20positioning%20latency.docx) Discussion on positioning latency Huawei, HiSilicon discussion Rel-17

[R2-2103614](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103614_Pos_latency_Final.docx) Considerations on positioning latency Sony Europe B.V. discussion Rel-17

[R2-2103785](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103785%20(R17%20NR%20POS%20WI_AI8112_Latency).doc) Enhancements for Latency Reduction InterDigital, Inc. discussion Rel-17 NR\_pos\_enh

[R2-2103898](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103898_(Scheduling%20in%20Advance).docx) Scheduling Location in Advance to reduce Latency Qualcomm Incorporated discussion

[R2-2103899](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103899_(Response%20LS%20to%20SA2%20on%20scheduling%20location%20in%20advance).docx) [draft] Response LS on Scheduling Location in Advance to reduce Latency Qualcomm Incorporated LS out To:SA2 Cc:RAN1, RAN3

* Revised in R2-2104587 (covered in email discussion [612])

[R2-2103914](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103914%20latency.docx) Reducing Latency for Positioning procedures Ericsson discussion

[R2-2104179](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104179%20(8.11.2)%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

[R2-2104181](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104181(8.11.2)%20latency%20reduction%20via%20measurement%20gap%20signaling%20optimization.docx) Latency reduction via measurement gap signalling optimization Samsung R&D Institute UK discussion

[R2-2104274](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104274_positioning_latency_reduction.docx) Disucssion on latency reduction ZTE Corporation, Sanechips discussion Rel-17 NR\_pos\_enh-Core

[R2-2104275](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104275_positioning_periodic_PRS_measurement.docx) Discussion on preiodic PRS measurement ZTE Corporation, Sanechips discussion Rel-17 NR\_pos\_enh-Core

### 8.11.3 RRC Inactive

Methods, measurements, signalling and procedures to support positioning for UEs in RRC\_ INACTIVE state, for UE-based and UE-assisted positioning solutions.

Summary document

[R2-2104495](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104495%20Summary%20for%20AI%208.11.3%20RRC%20Inactive.docx) Summary for AI 8.11.3 RRC INACTIVE vivo discussion FS\_NR\_pos\_enh

[Proposals that may be agreeable]

Proposal 1: Deferred MT-LR should be supported in RRC\_INACTIVE.

Discussion:

CATT wonder if this includes the whole MT-LR procedure or just the LCS request; the latter would be out of our scope.

Intel think the fundamental issue will be which messages can be transmitted, rather than which LCS cases can be supported. Huawei think some general guidelines would be beneficial; they understand that the UE can receive the LCS request in RRC\_CONNECTED and perform the measurements after moving to RRC\_INACTIVE.

ZTE think immediate MT-LR can also be supported in RRC\_INACTIVE if MT SDT can be used.

Ericsson think SA2 already defined this for NB-IoT and we could follow that model, but we should not try to expand the scope further.

Proposal 10: The following cases for positioning measurement and/or location estimate reporting should be supported:

- PRS measurement and/or location estimate performed in RRC\_CONNECTED or RRC\_INACTIVE can be sent in RRC\_INACTIVE

- PRS measurement and/or location estimate performed in RRC\_INACTIVE can be sent in RRC\_CONNECTED.

Discussion:

Huawei think we talked about this in the SI phase and concluded to make the reporting transparent to the UE state, so this proposal is consistent with our conclusions. ZTE agree this is aligned with the SI phase.

Ericsson think we need to discuss the use case; they think if the UE has an LPP session it doesn’t make sense to go to RRC\_INACTIVE. Chair thinks the gNB could send the UE to RRC\_INACTIVE.

Xiaomi think it would be odd to take measurements in RRC\_CONNECTED and transmit them only after transitioning to RRC\_INACTIVE.

CATT do not see the value of taking measurements in RRC\_CONNECTED and sending them in RRC\_INACTIVE, so they do not think this requirement should be levied on the SDT session.

Proposal 14: The following RAT-independent positioning methods should be supported in RRC\_INACTIVE: A-GNSS, Motion Sensor, WLAN, TBS and Bluetooth.

[Proposals that require further discussion with high priority]

Proposal 2: To discuss whether MO-LR should be supported in RRC\_INACTIVE.

Proposal 3: To discuss whether SDT for positioning is used only when accuracy requirement is low.

Proposal 4: To further discuss whether UL LCS messages and LPP messages (in addition to ProvideLocationInformation) can be transferred in RRC\_INACTIVE via SDT.

Discussion:

Xiaomi think we should first agree that the Provide Location Information can be transferred in RRC\_INACTIVE via SDT, and then look at whether there are issues for other messages.

Qualcomm think this cannot be discussed without P1, because there has to be a location session with the LMF to allow the UE to send an LPP message; we need the framework of the supplementary services to establish the session. They understand that MT-SDT is out of scope in Rel-17 and the only mobile-originated LCS case that we have is the deferred MT-LR. They consider that this is somewhat an SA2 discussion because LPP has to fit in the SS framework.

CATT think the data transmission evaluation should be done in SDT, not here; if the message size fits in the SDT framework, the message can be transmitted by SDT.

Proposal 5: To further discuss whether DL LCS messages and LPP messages can be transferred in RRC\_INACTIVE if there is ongoing SDT for the UE.

Proposal 11: To discuss how to ensure suitable data volume threshold for measurement reporting via SDT, e.g. segmentation, report size optimization, dedicated RACH resource.

Proposal 12: To discuss whether the RRC state of UE is visible to LMF.

Proposal 13: To further discuss the support of UE-assisted DL NR E-CID method in RRC\_INACTIVE.

Proposal 15: Send an LS to RAN1 to study how to support the UL SRS transmission for UL positioning in RRC\_INACTIVE, including sync, power control, SRS spatial relation.

[Proposals that may require further discussion]

Proposal 6: If capability transfer via LPP in RRC\_INACTIVE is supported, to further discuss how to transfer.

Proposal 7: If assistance data transfer via LPP in RRC\_INACTIVE is supported, to further discuss how to transfer.

Proposal 8: To further discuss whether the enhancement of the current two ways to transfer assistance data should be supported.

Proposal 9: If location information request transmission in RRC\_INACTIVE can be supported, to further discuss how to transfer.

Proposal 16: RAN2 assumes that SRS is used for UL positioning in RRC\_INACTIVE, and SRS configuration for RRC\_INACTIVE can be delivered in RRCRelease message.

Proposal 17: RAN2 assumes that SRS is used for UL positioning in RRC\_INACTIVE, and RAN2 to discuss the delivery of SRS configuration in RRC\_INACTIVE.

Proposal 18: RAN2 assumes that SRS is used for UL positioning in RRC\_INACTIVE, and RAN2 to discuss TA maintenance mechanism for UE in RRC\_INACTIVE.

[Continued discussion on P4 and transparency of the UE state to LPP signalling]

Proposal 4 [repeated from above]: To further discuss whether UL LCS messages and LPP messages (in addition to ProvideLocationInformation) can be transferred in RRC\_INACTIVE via SDT.

Chair notes we agreed in the SI that measurements/location estimate can be transported in RRC\_INACTIVE. Question: Does this imply transport of Provide Location Information in RRC\_INACTIVE?

vivo understand that Provide Location Information should be transportable in RRC\_INACTIVE. Huawei also agree, and think for other LCS messages and LPP messages, it depends on the lower layer transport, e.g. based on the direction and size of the message; so they understand that any UE-initiated UL LCS or LPP message can be supported in RRC\_INACTIVE.

Intel have a similar understanding about Provide Location Information, but think that from the positioning perspective, we don’t care about the UE state; the fundamental issue from the positioning side is that the UE just sends/receives the positioning-related messages, and in RRC\_INACTIVE this would mean that you can send any message that meets the size limit, otherwise you have to enter connected mode. For DL messages, Intel understand the positioning functionality does not need to care about what the transport was. Think the selection of transport should be discussed in SDT WI.

ZTE think how to support the transmission should be handled by SDT and we should support Provide Location Information.

Ericsson wonder what messages we are talking about and think we should consider dependency on the size of the message; e.g. with multipath reporting the measurement report could be very large. They do not see value in delivering in RRC\_INACTIVE if subsequent messages will anyway force a transition to connected, and are not sure if we should be encouraging the UE to stay in inactive for a long time if it has to do many transmissions to complete the positioning information. Chair wonders if this decision needs to be made in LPP rather than lower layers. Ericsson would prefer not to exclude the possibility.

OPPO agree with P4 and think there is no need to have any restriction on the messages.

Qualcomm observe that the LPP message will always be encapsulated in an SS message, and it could be any LPP message; if this fits into the SDT data volume, they understand that it could be sent in RRC\_INACTIVE. They do not see a case where we send an LPP message directly to the network, and think we need to focus on P1 with the deferred MT-LR where the procedure is already specified in SA2.

Lenovo agree that the Provide Location Information can be transported, but think we should have some further discussion of how the transport is selected; they agree with Ericsson not to exclude the possibility of having LPP decide. For the state exposure, they think if there are different measurement requirements, it could affect the positioning processing.

CATT think all LCS and LPP messages can be delivered by SDT, depending only on the data volume. vivo agree with this, and think LPP does not need to know the RRC state.

Nokia think what can be signalled should be driven by the SDT capability and are not sure about exposing the RRC state to the LMF; they wonder what happens if the LMF sends an AD message to the UE without knowing the RRC state. They think we should wait for SDT before deciding transport criteria.

ZTE indicate that SDT will define a transport mechanism for any service (not just LPP), with criteria for transporting via SDT or moving to connected, e.g. data size. They understand that there will not be positioning-specific criteria and do not understand why it would be different for LPP than any other service. Accordingly, they do not see any SDT requirement to expose the state.

Ericsson would like to take no agreement now and come back next meeting.

Intel point out we only have six meetings and we need to make progress. Suggest we could take a WA.

InterDigital have the same understanding as Intel and think we should be able to transport any uplink message without a restriction; it is up to the gNB to configure the data volume threshold and they understand there are procedures that could make the gNB aware of the size of the report.

Huawei think we have studied this at length in the SI phase and time is limited. On Qualcomm’s comments, they understand that the LCS message is still transporting an LPP message.

Qualcomm think which LCS messages can be transported depends on SA2. Huawei agree and think the SA2 flow only supports deferred MT-LR.

Agreements:

WA: Any uplink LCS or LPP message can be transported in RRC\_INACTIVE from RAN2 perspective, subject to the data volume supported by AS layers. I.e. RAN2 do not specify a restriction on message type.

FFS if LPP needs to select transport, i.e. if the message is just submitted to lower layers which decide how to deliver it (SDT, change state, etc.).

FFS if RRC state is exposed to LPP.

The following documents will not be individually treated

[R2-2102788](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102788%20Discussion%20DL%20positioning%20support%20in%20%20RRC_INACTIVE%20state.docx) Discussion DL positioning support in RRC\_INACTIVE states vivo discussion FS\_NR\_pos\_enh Withdrawn

[R2-2102798](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102798%20-%20Discussion%20on%20DL%20Positioning%20methods%20in%20RRC_INACTIVE%20state.docx) Discussion on DL Positioning methods in RRC\_INACTIVE state OPPO discussion Rel-17 FS\_NR\_pos\_enh

[R2-2102799](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102799%20-%20Discussion%20on%20UL%20Positioning%20methods%20in%20RRC_INACTIVE%20state.docx) Discussion on UL Positioning methods in RRC\_INACTIVE state OPPO discussion Rel-17 FS\_NR\_pos\_enh

[R2-2102850](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102850%20Support%20of%20Positioning%20in%20RRC_INACTIVE.docx) Support of Positioning in RRC\_INACTIVE Intel Corporation discussion Rel-17 NR\_pos\_enh

[R2-2102926](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102926%20Considerations%20on%20positioning%20for%20UEs%20in%20RRC_INACTIVE.docx) Considerations on Positioning for UEs in RRC\_INACTIVE state CATT discussion Rel-17 NR\_pos\_enh

[R2-2103130](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103130%20Positioning%20enhancements%20on%20RRC%20inactive%20UE.doc) Positioning enhancements on RRC Inactive UE Xiaomi discussion

[R2-2103383](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103383_Inactive_Idle_Positioning_LenMM.docx) On Positioning in RRC\_INACTIVE state Lenovo, Motorola Mobility discussion Rel-17

[R2-2103537](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103537%20Discussion%20on%20positioning%20in%20RRC%20INACTIVE%20state.docx) Discussion on positioning in RRC INACTIVE state Huawei, HiSilicon discussion Rel-17

R2-2103611 Considerations on positioning RRC Inactive Sony Europe B.V. discussion Rel-17 Late

[R2-2103612](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103612_Pos_Inactive_Final.docx) Considerations on positioning RRC Inactive Sony Europe B.V. discussion Rel-17

[R2-2103786](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103786%20(R17%20NR%20POS%20WI%20AI8113_INACTIVE).doc) Positioning in RRC INACTIVE state InterDigital, Inc. discussion Rel-17 NR\_pos\_enh

[R2-2103900](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103900_(positioning%20in%20inactive%20state).docx) Positioning of UEs in RRC Inactive State Qualcomm Incorporated discussion

[R2-2103915](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103915%20SDT.docx) On Usage of SDT for Positioning Ericsson discussion

[R2-2103997](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103997%20Inactive_Positioning.docx) Considerations on positioning in RRC\_INACTIVE Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_pos\_enh-Core

[R2-2104129](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104129%20UL%20and%20DL+UL%20NR%20positioning%20methods%20in%20RRC_INACTIVE.docx) UL and DL+UL NR positioning methods vivo Mobile Communication Co., discussion

[R2-2104183](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104183%20(8.11.3)%20ePOS%20inactive%20positioning.docx) Support of positioning result reporting in Inactive state Samsung R&D Institute UK discussion

[R2-2104272](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104272_positioning_dl_inactive_positioning.docx) Discussion on DL INACTIVE positioning ZTE Corporation, Sanechips discussion Rel-17 NR\_pos\_enh-Core

R2-2104280 Discussion DL positioning support in RRC\_INACTIVE states vivo Mobile Communication Co., discussion Withdrawn

[R2-2104282](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104282%20Discussion%20DL%20positioning%20support%20in%20%20RRC_INACTIVE%20state.docx) Discussion DL positioning support in RRC\_INACTIVE states vivo Mobile Communication Co., discussion

### 8.11.4 On-demand PRS

Specify UE-initiated and LMF-initiated on-demand transmission and reception of DL PRS for DL and DL+UL positioning for UE-based and UE-assisted positioning solutions

Summary document

R2-2103542 Summary of AI 8.11.4 for on-demand PRS Huawei, HiSilicon discussion Rel-17 Late

* Revised in R2-2104507

[R2-2104507](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104507%20Summary%20of%20AI%208.11.4%20for%20on-demand%20PRS.docx) Summary of AI 8.11.4 for on-demand PRS Huawei, HiSilicon discussion Rel-17

Proposal0: RAN2 to discuss whether to prioritize LMF-initiated PRS request.

Discussion:

Qualcomm think prioritisation would be a RAN plenary issue and doesn’t need to be resolved now.

ZTE think the UE-initiated and LMF-initiated cases are similar anyway. They are OK to prioritise LMF-based if there is a time restriction.

Samsung think there might be a time shortage and would like to prioritise the LMF-initiated case.

[UE-initiated on-demand PRS request]

Proposal1: RAN2 should discuss what parameters for UE-initiated on-demand PRS request can be decided in RAN2. The parameters to consider include:

 Beam ON/OFF request

 ON/OFF request for the PRS request

 Configuration index

 Explicit PRS configuration, e.g., periodicity, repetition, bandwidth, etc.

 Low power indication

 Preferred number of gNBs/TRPs

 Preferred starting and validity time

Proposal2: Send an LS to RAN1 for the other parameters the UE can request.

Proposal3: LMF provides assistance data of candidate PRS configurations to the UE, from which the UE can request for UE-initiated on-demand PRS request.

 This can be enabled by enhancing the LPP message ProvideAssisntanceData.

 What assistance data are FFS, e.g.,

 Mapping between PRS configuration and index

 What TRP and beam the UE can request

 Mapping between PRS configuration and QoS/radio condition

Proposal4: RAN2 to discuss whether triggering condition needs to be defined for UE-initiated on-demand PRS request, and if considered desirable, what conditions to be specified, e.g., QoS level, measurement, etc.

Proposal5: UE-initiated on-demand PRS request is enabled by enhancing LPP RequestAssistanceData. RAN2 should further study the following:

 FFS: whether the UE can request PRS per positioning method.

Discussion:

Lenovo think we could make a similar proposal to handle the LMF-initiated case by enhancing NRPPa.

Qualcomm think it is always initiated by the LMF, even if the original request comes from the UE. So they think we need to decide on the parameters for LMF-initiated. So they see P6 as critical, but think RAN1 need to address it. For P5, they think Request Assistance Data is the only reasonable choice.

Ericsson agree with Qualcomm and think this is why LMF-initiated can be prioritised. They think it would be a poor network implementation that did not optimise the UE requests. Huawei think this is addressed by P3 to prevent the UE from requesting random things.

ZTE are OK with the proposal to have a common framework and wonder if we should prevent the UE from requesting too frequently.

Intel think we discussed last meeting whether UE-initiated should be recommended, and concluded that it was recommended for normative work; the WID reflects that.

Agreements:

UE-initiated on-demand PRS request is enabled by enhancing LPP RequestAssistanceData. FFS how much control the network has over the UE request.

The UE-initiated mechanism is enabled by the UE request triggering a request from the LMF, and the actual PRS changes are requested by the LMF irrespective of whether the procedure is UE- or LMF-initiated.

Put the stage 2 description for UE-initiated and LMF-initiated PRS request under the same framework.

[LMF-initiated on-demand PRS request]

Proposal6: RAN2 should discuss what parameters for LMF-initiated on-demand PRS request can be decided in RAN2. The parameters to consider include

 Beam ON/OFF request

 ON/OFF request for PRS request

 Configuration index

 Explicit PRS configuration, e.g., periodicity, bandwidth, repetition, etc

 Start Time and validity time

Discussion:

Huawei understand that we have discussed these parameters to some extent and this is a list of the parameters that could be in RAN2 scope; if we conclude on these, we could send an LS to notify RAN1 and RAN3. They think there is not much convergence yet on the details except for start time and validity time.

Xiaomi think this should be discussed along with P1 for the UE-initiated case.

Intel think the difference between the UE-initiated and LMF-initiated cases is just the low power indication and the UE preferred parameters; this is part of the reason they do not see a need to prioritise. They also think these are mostly RAN1-related parameters and should be decided there.

CATT think it is RAN1’s decision to identify the parameters, but RAN1 did not discuss it this meeting and we cannot draw any conclusion on the RAN1 parameters. Suggest we wait for an LS from RAN1 on parameters.

vivo agree with Intel that these parameters are RAN1-related.

Huawei think start time and validity time are in RAN2 scope. They agree the others are RAN1 scope.

OPPO think we could look at P3.

Proposal7: For involvement with the other groups for LMF-initiated PRS request:

 Send an LS to RAN1 for the other parameters the LMF can request

 Send an LS to RAN3 the required parameter to support LMF-initiated on-demand PRS request in NRPPa from RAN2’s perspective

Proposal8: gNB/TRPs provides a selected set of PRS configurations from which the LMF/UE can select to request on-demand.

 FFS how this is enabled, e.g., with 5GC periodic/semi-persistent/aperiodic PRS

Proposal9: UE can provide feedbacks to the LMF for the assistance of LMF-initiated on-demand PRS request. Candidate solutions for the feedback include:

 UE feedbacks for the UE-based mode, which may include

 Measurement results and/or location estimate for UE-based positioning

 Beam index, channel state information

 PRS and RRM measurement results

 FFS whether there is any spec change required

 GDOP results, DL-PRS RSRP and positioning ranging errors/uncertainties

 LOS/NLOS classifications

 Feedbacks on detected reference signals

 FFS RRC state that this feedback to be provided

The following documents will not be individually treated

[R2-2102790](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102790%20on-demand%20PRS.docx) discuss on-demand PRS vivo discussion FS\_NR\_pos\_enh

[R2-2102797](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102797-%20Discussion%20on%20on-demand%20DL-PRS.doc) Discussion on on-demand DL-PRS OPPO discussion Rel-17 FS\_NR\_pos\_enh

[R2-2102851](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102851%20Support%20of%20on%20demand%20PRS.docx) On-Demand PRS transmission Intel Corporation discussion Rel-17 NR\_pos\_enh

[R2-2102927](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102927%20Discussion%20on%20on-demand%20PRS.docx) Discussion on on-demand PRS CATT discussion Rel-17 NR\_pos\_enh

[R2-2103132](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103132%20Discussion%20on%20on-demand%20DL%20PRS%20procedure.doc) Discussion on on-demand DL PRS procedure Xiaomi discussion

[R2-2103250](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103250%20Discussion%20on%20the%20enhancements%20of%20on-demand%20PRS.docx) Discussion on the enhancements of on-demand PRS Spreadtrum Communications discussion Rel-17

[R2-2103384](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103384_On-DemandPRS_LenMM.docx) On-Demand DL-PRS Support Lenovo, Motorola Mobility discussion Rel-17

[R2-2103538](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103538%20Discussion%20on%20on-demand%20PRS.docx) Discussion on on-demand PRS Huawei, HiSilicon discussion Rel-17

[R2-2103564](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103564.docx) On-demand PRS Fraunhofer IIS, Fraunhofer HHI discussion Rel-17

[R2-2103613](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103613_Pos_PRS_Ondemand_Final.docx) Considerations on positioning PRS On-demand Sony Europe B.V. discussion Rel-17

[R2-2103787](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103787%20(R17%20NR%20POS%20WI_AI8114_OnDemand).doc) Procedures for On-demand PRS InterDigital, Inc. discussion Rel-17 NR\_pos\_enh

[R2-2103858](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103858%20signaling%20for%20on%20demand%20PRS.doc) Discussion on the signaling support for on-demand PRS Apple discussion

[R2-2103901](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103901_(On-demand%20PRS).docx) On-demand PRS Qualcomm Incorporated discussion

[R2-2103916](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103916%20EnergySavings.docx) On demand PRS for energy savings Ericsson discussion

* Revised in R2-2104500

[R2-2104500](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104500.docx) On demand PRS for energy savings Ericsson discussion

* Revised in R2-2104508

[R2-2104508](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104508%20EnergySavings.docx) On demand PRS for energy savings Ericsson discussion

[R2-2103998](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103998%20On-demand%20PRS%20considerations.docx) On-demand PRS transmission considerations Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_pos\_enh-Core

[R2-2103999](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103999%20Enhancement%20to%20on-demand%20PRS.docx) Latency enhancement to on-demand PRS functionality Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_pos\_enh-Core

[R2-2104142](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104142%20UE-initiated%20requests%20for%20on-demand%20PRS.docx) UE-initiated requests for on-demand PRS Convida Wireless discussion

[R2-2104184](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104184%20(8.11.4)%20ePOS%20on%20demand%20DL%20PRS%20activation%20.docx) Support of on-demand DL PRS for positioning efficiency Samsung R&D Institute UK discussion

[R2-2104276](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104276_positioning_on_demand_PRS.docx) Discussion on on demand PRS ZTE Corporation, Sanechips discussion Rel-17 NR\_pos\_enh-Core

### 8.11.5 GNSS positioning integrity

Signalling, and procedures to support GNSS positioning integrity determination

Summary document

[R2-2104291](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104291_Summary_of_AI_8115_Integrity.docx) Summary of 8.11.5 GNSS positioning integrity InterDigital, Inc. discussion Rel-17 NR\_pos\_enh-Core

* Revised in R2-2104497

[R2-2104497](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104497_Summary_of_AI_8115_Integrity.docx) Summary of 8.11.5 GNSS positioning integrity InterDigital, Inc. discussion Rel-17 NR\_pos\_enh-Core

[Potential LSs]

Proposal 1: Send LS to CT1 and CT4, if the following is agreed in RAN2:

• Define the positioning integrity KPI (e.g. AL, TIR, TTA) in the QoS requirements in LCS request

• Support for both Mode 1 and Mode 2 for integrity results reporting in LCS response

Discussion:

Intel think we can indicate that the KPIs are needed but we don’t dictate whether it goes in the QoS requirements.

Qualcomm think it should go to SA1/SA2 where the QoS parameters are specified, but they think the issue is legitimate. They assume the signalling will indicate a qualitative value to the LMF which will translate it into something concrete for LPP signalling, and they agree we may need this LS.

ZTE think the majority of companies prefer to support both mode 1 and mode 2, and they can accept the majority view, but they think it’s hard to imagine a case where mode 1 is necessary.

Huawei doubt if it is necessary to go to SA1, since the requirements for integrity originate from RAN2. They suggest sending the LS to the CT groups where stage 3 impact would be, and Cc:ing SA2 so they can decide if something is needed in stage 2.

Ericsson doubt if it is urgent to send the LS right away and think we should discuss the need for the parameters first.

Nokia wonder if we have any agreement to indicate to the other groups.

Qualcomm think this LS does not affect our work in RAN2, but SA1/SA2 work is required. They do not see a strong need to send the LS now.

* No LS on this subject for now

Proposal 2: Liaise with RTCM SC134 working group on GNSS assistance data for integrity message

Discussion:

CATT support this LS and think we need to know the structure of the integrity information from RTCM.

Intel have a different view and think RTCM will only provide their first output later in the year or next year, so it may not be productive to wait for them. It would be OK to check the progress.

Qualcomm point out that RTCM already sent an LS to RAN#88-e, and we could use this as a trigger; they think we should align the work with RTCM.

Swift think we can have some more discussion and determine what to ask in an LS.

[Signalling and procedures for integrity]

Proposal 10: For UE-based positioning integrity,

• in the assistance data transferred from LMF to UE

o include the following:

 feared events in the GNSS assistance data

 feared events during positioning data transmission

 GNSS feared events

o Further study on the following:

• inclusion of assumed probability parameters relating to the GCP

• on whether to use LPP Assistance Data Transfer Procedure for transferring the probability parameters relating to the GCP

Proposal 11: For UE-assisted positioning integrity,

• in the assistance data transferred from UE to LMF

o include the following:

 UE feared events (e.g. GNSS receiver measurement error)

o Further study on the following:

 inclusion of assumed probability parameters relating to the UE

 on whether to use LPP Location Information Transfer Procedure to transfer the probability parameters relating to the UE

Proposal 15: Agree that the Integrity KPIs transferred between UE and LMF include TIR, AL, TTA

Proposal 16: Agree Integrity Result reporting,

• includes the following:

o PL Reporting (Mode 1)

o Integrity Event Flagging (Mode 2)

• Further study on including Achieved KPIs (i.e. actual KPIs that were achieved during the integrity computation)

Proposal 24: Agree on using the following existing LPP procedures with enhancements for transferring integrity related information between UE and LMF:

• LPP Capability Transfer procedure (via Request Capabilities and Provide Capabilities messages)

• LPP Assistance Data Transfer procedure (via Request Assistance Data and Provide Assistance Data messages)

• LPP Location Information Transfer procedure (via Request Location Information and Provide Location Information messages)

The following documents will not be individually treated

[R2-2102787](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102787%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

[R2-2102928](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102928%20Discussion%20on%20signalling%20and%20procedures%20to%20support%20GNSS%20positioning%20integrity.docx) Discussion on signalling and procedures to support GNSS positioning integrity CATT discussion Rel-17 NR\_pos\_enh

[R2-2102994](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102994%20Pos_Integrity.docx) Signalling and Procedures for Positioning Integrity Support Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_pos\_enh

[R2-2103133](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103133%20Discussion%20on%20methodologies%20for%20positioning%20integrity.doc) Discussion on signalling and procedures for GNSS positioning integrity Xiaomi discussion

[R2-2103145](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103145%20Introduction%20of%20positioning%20integrity%20related%20timer.doc) Introduction of positioning integrity related timer OPPO discussion Rel-17

[R2-2103539](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103539%20Discussion%20on%20network-assisted%20and%20UE-assisted%20integrity.docx) Discussion on network-assisted and UE-assisted integrity Huawei, HiSilicon discussion Rel-17

[R2-2103567](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103567.docx) UE-aided detection of threat to GNSS systems and assistance data signalling Fraunhofer IIS, Fraunhofer HHI discussion

[R2-2103750](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103750%20Guiding%20framework%20on%20integrity%20concepts%20for%20A-GNSS%20positioning.docx) Guiding framework on integrity concepts for A-GNSS positioning ESA discussion Rel-17 NR\_pos\_enh

[R2-2103788](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103788%20(R17%20NR%20POS%20WI%20AI8115_Integrity).doc) Procedures for GNSS positioning integrity InterDigital, Inc. discussion Rel-17 NR\_pos\_enh

[R2-2103917](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103917%20GNSS.docx) GNSS Integrity aspects of GNSS local environment and UE feared events Ericsson discussion

[R2-2103954](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Docs\R2-2103954.zip) Considerations on Positioning Integrity Determination Swift Navigation, Intel Corporation, Ericsson discussion

[R2-2104189](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104189%20(8.11.5)%20positioning%20integrity%20ePOS.docx) Consideration on the signalling design for Positioning Integrity Samsung R&D Institute UK discussion

[R2-2104273](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2104273_positioning_integrity_transportation.docx) Discussion on positioning integrity ZTE Corporation, Sanechips discussion Rel-17 NR\_pos\_enh-Core

### 8.11.6 Other

Input on other WI objectives.

[R2-2102929](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2102929%20Discussion%20on%20measurement%20report%20for%20accuracy%20improvement.docx) Discussion on Measurement Time Windows for accuracy improvement CATT discussion Rel-17 NR\_pos\_enh

[R2-2103540](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103540%20Discussion%20on%20positioning%20enhancement.docx) Discussion on R17 positioning enhancement Huawei, HiSilicon discussion Rel-17

[R2-2103789](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103789%20(R17%20NR%20POS%20WI%20AI8116_INACTIVE%20mobility).doc) Positioning during mobility and in RRC INACTIVE InterDigital, Inc. discussion Rel-17 NR\_pos\_enh

[R2-2103902](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103902_(Reference%20Devices).docx) Signalling and Procedures for supporting Reference Location Devices Qualcomm Incorporated discussion

[R2-2103918](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202104%20-%20RAN2_113bis-e,%20Online\Extracts\R2-2103918%20Accuracy.docx) On High Accuracy Aspects Ericsson discussion