3GPP TSG-RAN WG2 Meeting #119-e R2-22xxxxx

Online, 17-26 August 2022

Source: Session Chair (MediaTek)

Title: Report from session on positioning and sidelink relay

# Status of At-Meeting Email Discussions

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

* [AT119-e][400][POS][Relay] Organisational Nathan – Positioning/Relay (MediaTek)

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

Intended outcome: Well-informed participants

Deadline: Friday 2022-08-26 1000 UTC

* [AT119-e][405][POS] Rel-15/16 positioning stage 2 (CATT)

Scope: Evaluate the CRs in R2-2207108/R2-2207109 and check for agreeability.

Intended outcome: Agreed CRs

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][406][POS] Rel-15/16 positioning RRC (Huawei)

Scope: Evaluate the CRs in R2-2207408/R2-2207561/R2-2207873/R2-2207874/R2-2207875/R2-2207876 and check for agreeability.

Intended outcome: Agreed CRs, and report in R2-2208820

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][407][POS] Rel-15/16 LPP (Qualcomm)

Scope: Evaluate the CRs in R2-2207103/R2-2207104/R2-2207870/R2-2207871/R2-2207872/R2-2208069/R2-2208070/R2-2208071/R2-2208121/R2-2208123 and check for agreeability (discussion document in R2-2208119 can be taken into account).

Intended outcome: Agreed CRs, and report in R2-2208962

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][408][POS] Rel-17 positioning stage 2 (Intel)

Scope: Check and update the rapporteur CR in R2-2207384 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2207110
* R2-2208491
* R2-2208521
* R2-2208415
* R2-2208419
* R2-2208494

Intended outcome: Agreeable CR in R2-2208801 and report in R2-2208816

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][409][POS] Rel-17 positioning capabilities (Intel)

Scope: Check and update the rapporteur CR in R2-2207385 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2208492

Intended outcome: Agreeable CR in R2-2208802 and report in R2-2208817

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][410][POS] Rel-17 positioning MAC (Huawei)

Scope: Check and update the rapporteur CR in R2-2207880 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2207886
* R2-2208125
* R2-2208204
* R2-2208300
* R2-2208512
* R2-2208686
* R2-2207883
* R2-2207012

Intended outcome: Agreeable CR in R2-2208818 and report in R2-2208819

Deadline: Tuesday 2022-08-23 1200 UTC – extended to Thursday 2022-08-25 2000 UTC

* [AT119-e][411][POS] Rel-17 positioning RRC (Ericsson)

Scope: Check and update the rapporteur CR in R2-2208076 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2207411
* R2-2207881

Summary discussion document in R2-2208710 can be taken into account.

Intended outcome: Agreeable CR in R2-2208825

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][412][Relay] Rel-17 SRAP and PDCP (OPPO)

Scope: Check and update the rapporteur CR in R2-2207020 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2207453
* R2-2208361
* R2-2208487
* R2-2207516

Intended outcome: Agreeable CR to 38.351 in R2-2208799 and agreed CR to 38.323 (note: R2-2207516 may be agreed by email if it is found agreeable and no other PDCP CR is needed)

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][413][Relay] Rel-17 relay MAC (Apple)

Scope: Check and update the rapporteur CR in R2-2207449 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2208156

Intended outcome: Agreeable CR in R2-2208812

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][414][Relay] Rel-17 relay RRC (Huawei)

Scope: Check and update the rapporteur CR in R2-2208484 to take account of decisions of this meeting. Evaluate the proposals discussed in R2-2208795 for merging into the CR.

Intended outcome: Agreeable CR in R2-2208813 and report in R2-2208828

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][415][Relay] Rel-17 relay stage 2 (MediaTek)

Scope: Evaluate the proposals in the following tdocs and merge into a rapporteur CR:

* R2-2207079
* R2-2207203
* R2-2207450
* R2-2207513
* R2-2208004
* R2-2208193
* R2-2208485
* R2-2207201

Intended outcome: Agreeable CR to 38.300 in R2-2208814 and endorsable TP to 37.985 in R2-2208815

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][416][POS] Rel-17 positioning integrity (Swift)

Scope: Evaluate the proposals in the following tdocs:

* R2-2207736
* R2-2208395

Intended outcome: Agreed CRs for merge into LPP rapporteur CR; report in R2-2208793

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][417][Relay] Communication and discovery terminology (OPPO)

Scope: Clarify the definitions of “NR sidelink communication” and “NR sidelink discovery” across 38.300, 38.321, and 38.331. Discussion in R2-2207021 can be used as a starting point.

Intended outcome: Report to CB session in R2-2208798

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][418][Relay] Remaining proposals on discovery and (re)selection (Lenovo)

Scope: Discuss P3a/P3b/P4/P5a/P5b of R2-2208796 and attempt to reach agreements.

Intended outcome: Report to CB session in R2-2208804

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][419][POS] LS from RTCM (Ericsson)

Scope: Discuss the LS in R2-2206903 and determine what next steps are desirable from the positioning session point of view, targeting a future discussion with organisational leadership to determine the formal process if necessary.

Intended outcome: Report to CB session in R2-2208805

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][420][POS] LS to RAN1/RAN4 on positioning in FR2-2 (Samsung)

Scope: Draft an LS to RAN1 and RAN4 inquiring about the possibility of supporting SRSp/PRS with 480/960 kHz SCS in FR2-2.

Intended outcome: Approved LS (without CB if possible) in R2-2208810

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][421][POS] Delta configuration for SRSp in RRC\_INACTIVE (CATT)

Scope: Discuss the situation described in R2-2207112 and determine if RAN2 should take action; if the issue is deemed valid, attempt to agree on at least the direction of a solution.

Intended outcome: Report to CB session in R2-2208806

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][422][POS] LS to RAN1/RAN4 on DL-PRS sample capability (ZTE)

Scope: Draft an LS to RAN1/RAN4 indicating that we find a disconnect between the capabilities for reduced DL-PRS processing samples in different states, and requesting clarification.

Intended outcome: Approved LS (to be sent urgently) in R2-2208797

Deadline: Friday 2022-08-19 1200 UTC

* [AT119-e][423][POS] SR configuration for Measurement Gap Activation/Deactivation Request MAC CE (Huawei)

Scope: Draft an LS to RAN1 notifying them of the RAN2 decision on a dedicated SR configuration for the Measurement Gap Activation/Deactivation Request MAC CE.

Intended outcome: Approved LS in R2-2208811

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][424][POS] Rel-17 LPP CR (Qualcomm)

Scope: Draft a CR to 37.355 taking account of this meeting’s decisions.

Intended outcome: Agreeable CR in R2-2208800, report in R2-2208803

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][425][POS] UE-based integrity assessment (Ericsson)

Scope: Evaluate the proposal in R2-2208075 from the standpoint of determining if it is an essential correction. New functionality will not be introduced and the discussion should determine if there is support for this change as a correction in Rel-17.

Intended outcome: Report to CB session in R2-2208807

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][426][POS] TEG timing error margin in RRC and LPP (CATT)

Scope: Discuss the handling of the TEG timing error margins in RRC and LPP and conclude on an agreeable implementation approach. RAN4 agreements should be taken into account.

Intended outcome: Report to CB session in R2-2208808

Deadline: Tuesday 2022-08-23 1200 UTC

* [AT119-e][427][Relay] Handling of scenarios 1 and 2 (LG)

Scope: Discuss the relation of scenarios 1 and 2 (including organisation/prioritisation of work and P2 of R2-2208429).

Intended outcome: Report to CB session in R2-2208809

Deadline: Tuesday 2022-08-23 1200 UTC

# 4 EUTRA Rel-16 and earlier

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

## 4.3 Positioning corrections Rel-16 and earlier

(LTE\_NavIC-Core, LTE TEI16 Positioning), REL-15 and Earlier WIs are in scope but not listed explicitly (long list).

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

# 5 NR Rel-15 and Rel-16

Essential corrections only.

Tdoc Limitation: 11 tdocs in total for all sub agenda items.

## 5.3 NR Positioning Support

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

(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 by email. No web conference is planned for this agenda item.

### 5.3.1 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).

* [AT119-e][405][POS] Rel-15/16 positioning stage 2 (CATT)

Scope: Evaluate the CRs in R2-2207108/R2-2207109 and check for agreeability.

Intended outcome: Agreed CRs

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2207108](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38305_CR0101_(Rel-16)_R2-2207108.docx) Correction on the description of deferred MT-LR CATT CR Rel-16 38.305 16.7.0 0101 - F NR\_pos-Core

* Agreed (email discussion [AT119-e][405])

[R2-2207109](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38305_CR0102_(Rel-17)_R2-2207109.docx) Correction on the description of deferred MT-LR CATT CR Rel-17 38.305 17.1.0 0102 - A NR\_pos-Core

* Agreed (email discussion [AT119-e][405])

### 5.3.2 RRC corrections

Including impact to 36.331, 38.331, and 38.306.

* [AT119-e][406][POS] Rel-15/16 positioning RRC (Huawei)

Scope: Evaluate the CRs in R2-2207408/R2-2207561/R2-2207873/R2-2207874/R2-2207875/R2-2207876 and check for agreeability.

Intended outcome: Agreed CRs, and report in R2-2208820

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208820](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208820%20%5b406%5d%5bPOS%5d%20Rel-15%20and%2016%20positioning%20RRC%20(Huawei)_v11_final.docx) [Offline-406][POS] Rel-15 16 positioning RRC (Huawei) Huawei, HiSilicon discussion

[R2-2207408](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207408%20Change%20request%20about%20Periodicity%20in%20SRSp%20configuration.docx) Change request about Periodicity in SRSp configuration vivo CR Rel-16 38.331 16.9.0 3259 - D NR\_pos-Core

[R2-2207561](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207561%20Change%20request%20about%20Periodicity%20in%20SRSp%20configuration%20-%20R17.docx) Change request about Periodicity in SRSp configuration vivo CR Rel-17 38.331 17.1.0 3283 - A NR\_pos\_enh-Core

[R2-2207873](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207873%20Correction%20for%20SRS-PeriodicityAndOffset-R16.docx) Correction for SRS-PeriodicityAndOffset-R16 Huawei, HiSilicon CR Rel-16 38.331 16.9.0 3320 - F NR\_pos-Core

* Revised in R2-2208821

[R2-2208821](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208821%20Correction%20for%20SRS-PeriodicityAndOffset-R16.docx) Correction for SRS-PeriodicityAndOffset-R16 Huawei, HiSilicon CR Rel-16 38.331 16.9.0 3320 1 F NR\_pos-Core

[R2-2207874](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207874%20Correction%20for%20SRS-PeriodicityAndOffset-R17.docx) Correction for SRS-PeriodicityAndOffset-R17 Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3321 - A NR\_pos-Core

* Revised in R2-2208822

[R2-2208822](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208822%20Correction%20for%20SRS-PeriodicityAndOffset-R17.docx) Correction for SRS-PeriodicityAndOffset-R17 Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3321 1 A NR\_pos-Core

[R2-2207875](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207875%20Correction%20for%20the%20capability%20of%20SRS-PeriodicityAndOffset-R16.docx) Correction for the capability of SRS-PeriodicityAndOffset-R16 Huawei, HiSilicon CR Rel-16 38.306 16.9.0 0780 - F NR\_pos-Core

* Revised in R2-2208823

[R2-2208823](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208823%20Correction%20for%20the%20capability%20of%20SRS-PeriodicityAndOffset-R16.docx) Correction for the capability of SRS-PeriodicityAndOffset-R16 Huawei, HiSilicon CR Rel-16 38.306 16.9.0 0780 1 F NR\_pos-Core

[R2-2207876](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207876%20Correction%20for%20the%20capability%20of%20SRS-PeriodicityAndOffset-R17.docx) Correction for the capability of SRS-PeriodicityAndOffset-R17 Huawei, HiSilicon CR Rel-17 38.306 17.1.0 0781 - A NR\_pos-Core

* Revised in R2-2208824

[R2-2208824](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208824%20Correction%20for%20the%20capability%20of%20SRS-PeriodicityAndOffset-R17.docx) Correction for the capability of SRS-PeriodicityAndOffset-R17 Huawei, HiSilicon CR Rel-17 38.306 17.1.0 0781 1 A NR\_pos-Core

### 5.3.3 LPP corrections

* [AT119-e][407][POS] Rel-15/16 LPP (Qualcomm)

Scope: Evaluate the CRs in R2-2207103/R2-2207104/R2-2207870/R2-2207871/R2-2207872/R2-2208069/R2-2208070/R2-2208071/R2-2208121/R2-2208123 and check for agreeability (discussion document in R2-2208119 can be taken into account).

Intended outcome: Agreed CRs, and report in R2-2208962

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208962](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208962_(%5bAT119-e%5d%5b407%5d%5bPOS%5d%20Rel-15-16%20LPP)_v12_Summary.docx) Summary of [AT119-e][407][POS] Rel-15/16 LPP (Qualcomm) Qualcomm Incorporated discussion

* Noted (email discussion [AT119-e][407])

[R2-2207103](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\37355_CR0355_(Rel-16)_R2-2207103.docx) Minor corrections on TS 37.355 CATT CR Rel-16 37.355 16.8.0 0355 - F NR\_pos-Core

* Not pursued (email discussion [AT119-e][407])

[R2-2207104](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\37355_CR0356_(Rel-17)_R2-2207104.docx) Minor corrections on TS 37.355 CATT CR Rel-17 37.355 17.1.0 0356 - A NR\_pos-Core

* Not pursued (email discussion [AT119-e][407])

[R2-2207870](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207870%20Correction%20to%20need%20code%20in%20posSIB_R17.docx) Correction to need code in posSIB\_R17 Huawei, HiSilicon CR Rel-17 37.355 17.1.0 0366 - A NR\_newRAT-Core

* Not pursued (email discussion [AT119-e][407])

[R2-2207871](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207871%20Correction%20to%20need%20code%20in%20posSIB_R16.docx) Correction to need code in posSIB\_R16 Huawei, HiSilicon CR Rel-16 37.355 16.8.0 0367 - A NR\_newRAT-Core

* Not pursued (email discussion [AT119-e][407])

[R2-2207872](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207872%20Correction%20to%20need%20code%20in%20posSIB_R15.docx) Correction to need code in posSIB\_R15 Huawei, HiSilicon CR Rel-15 37.355 15.3.0 0368 - F NR\_newRAT-Core

* Not pursued (email discussion [AT119-e][407])

[R2-2208069](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208069%20AssociatedDLPRS.docx) Correction of TRP beam information field descriptions for UEB DL-AoD Ericsson discussion Rel-16 37.355

* Not pursued (email discussion [AT119-e][407])

[R2-2208070](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208070%20catF.docx) Clarification on NR-DL-PRS-ResourcesCapability Ericsson CR Rel-16 37.355 16.8.0 0372 - F NR\_pos-Core

* Not pursued (email discussion [AT119-e][407])

[R2-2208071](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208071%20CapA.docx) Clarification on NR-DL-PRS-ResourcesCapability Ericsson CR Rel-17 37.355 17.1.0 0373 - A NR\_pos\_enh-Core

* Merged into R2-2208800 (email discussion [AT119-e][407])

[R2-2208119](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208119_(PRS%20Search%20Window).docx) Issues with DL-PRS Search Window Definitions Qualcomm Incorporated discussion

* Noted (email discussion [AT119-e][407])

[R2-2208121](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208121_(Rel-16%2037355%20PRS%20Search%20Window).docx) Correction to DL-PRS Search Window calculation Qualcomm Incorporated CR Rel-16 37.355 16.8.0 0375 - F NR\_pos-Core

* Not pursued (email discussion [AT119-e][407])

[R2-2208123](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208123_(Rel-17%2037355%20PRS%20Search%20Window).docx) Correction to DL-PRS Search Window calculation Qualcomm Incorporated CR Rel-17 37.355 17.1.0 0376 - A NR\_pos-Core

* Not pursued (email discussion [AT119-e][407])

### 5.3.4 MAC corrections

# 6 NR Rel-17

## 6.7 NR Sidelink relay

(NR\_SL\_Relay-Core; leading WG: RAN2; REL-17; WID: RP-212601)

WI has been declared 100% complete

Tdoc Limitation: 4 tdocs

### 6.7.1 Organizational

Incoming LSs, TS updates, rapporteur inputs. This AI is reserved for rapporteur and organizational inputs. For LSes that need action or have impact beyond taking into account by CR rapporteurs: One tdoc by contact company (one company) to address the LS and potential reply is considered Rapporteur Input and may be provided. Related documents and proposed responses from companies other than the contact company should be submitted to the corresponding technical agenda item.

Terminology alignment

[R2-2207021](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207021%20-%20Terminology%20alignment%20for%20Communication%20and%20Disocvery.docx) Terminology alignment for Communication and Disocvery OPPO discussion Rel-17 NR\_SL\_relay-Core

* [AT119-e][417][Relay] Communication and discovery terminology (OPPO)

Scope: Clarify the definitions of “NR sidelink communication” and “NR sidelink discovery” across 38.300, 38.321, and 38.331. Discussion in R2-2207021 can be used as a starting point.

Intended outcome: Report to CB session in R2-2208798

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208798](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208798%20-%20Summary%20of%20%5bAT119-e%5d%5b417%5d%5bRelay%5d%20Communication%20and%20discovery%20terminology%20(OPPO).docx) Summary of [AT119-e][417][Relay] Communication and discovery terminology (OPPO) OPPO discussion Rel-17 NR\_SL\_relay-Core

Agreements:

Proposal 1 Align the terminology definition 38.331/38.321/38.300 as follow:

1) NR sidelink communication: AS functionality enabling at least V2X Communication as defined in TS 23.287 [19] and ProSe communication (including ProSe non-Relay and UE-to-Network Relay communication) as defined in TS 23.304 [26], between two or more nearby UEs, using NR technology but not traversing any network node.

2) NR sidelink discovery: AS functionality enabling ProSe non-Relay Discovery and ProSe UE-to-Network Relay discovery for Proximity based Services as defined in TS 23.304 [65] between two or more nearby UEs, using NR technology but not traversing any network node.

Proposal 2 Adopt the definition in 38.321: NR sidelink transmission: Any NR Sidelink-based transmission, including both transmission for NR sidelink discovery and transmission for NR sidelink communication).

Rapporteur CRs

[R2-2207020](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38351_CR0006_(Rel-17)_R2-2207020%20-%20Correction%20on%20SRAP%20for%20L2%20U2N%20Relay_V0.2.docx) Correction on SRAP for L2 U2N Relay OPPO CR Rel-17 38.351 17.1.0 0006 - F NR\_SL\_relay-Core

* Revised in R2-2208799
* [AT119-e][412][Relay] Rel-17 SRAP and PDCP (OPPO)

Scope: Check and update the rapporteur CR in R2-2207020 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2207453
* R2-2208361
* R2-2208487
* R2-2207516

Intended outcome: Agreeable CR to 38.351 in R2-2208799 and agreed CR to 38.323 (note: R2-2207516 may be agreed by email if it is found agreeable and no other PDCP CR is needed)

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208829](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208829%20Summary%20of%20SRAP%20and%20PDCP%20correction.docx) Summary of User plane corrections OPPO discussion Rel-17 NR\_SL\_relay-Core

Proposal 1：SRAP entity is established by remote UE before SRB0 transmission, and SRB0 messages go through SRAP entity. No change to TS 38.351, change to TS 38.331 to be further checked in Phase-2.

[Chair’s note: Other proposals are incorporated in the CRs in R2-2208799 and R2-2207449.]

Agreement:

SRAP entity is established by remote UE before SRB0 transmission, and SRB0 messages go through SRAP entity. No change to TS 38.351, change to TS 38.331 to be further checked in Phase-2.

[R2-2208799](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38351_CR0009_(Rel-17)_R2-2208799%20-%20Correction%20on%20SRAP%20for%20L2%20U2N%20Relay.docx) Correction on SRAP for L2 U2N Relay OPPO CR Rel-17 38.351 17.1.0 0009 - F NR\_SL\_relay-Core

Discussion:

Samsung are fine in principle but have a concern with section 5.2.3 that they would like to clarify with the rapporteur.

OPPO checked the comment from Samsung and did not find a need for spec impact. Samsung clarify that the current text (“remove the SRAP header…”) does not read well and think it is unclear what the sentence means.

OPPO indicate the change came from a proposal from Apple on differentiating between SRB and DRB, and they understand a similar change has been applied elsewhere.

Nokia agree with Samsung.

* [Post119-e][402][Relay] Rel-17 relay 38.351 CR (OPPO)

Scope: Check the CR in R2-2208799.

Intended outcome: Agreed CR

Deadline: Short (for RP)

[R2-2207449](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207449%20MAC%20rapporteur%20CR%20for%20Misc%20SL%20relay%20corrections%20.docx) Miscellaneous corrections for NR Sidelink Relay (rapporteur CR) Apple CR Rel-17 38.321 17.1.0 1318 - F NR\_SL\_relay-Core, NR\_SL\_enh-Core

* Revised in R2-2208812
* [AT119-e][413][Relay] Rel-17 relay MAC (Apple)

Scope: Check and update the rapporteur CR in R2-2207449 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2208156

Intended outcome: Agreeable CR in R2-2208812

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208812](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208812%20MAC%20rapporteur%20CR%20for%20Misc%20SL%20relay%20corrections_clean_final.docx) Miscellaneous corrections for NR Sidelink Relay (rapporteur CR) Apple CR Rel-17 38.321 17.1.0 1318 1 F NR\_SL\_relay-Core, NR\_SL\_enh-Core

* Agreed

Discussion:

Apple clarify that the terminology discussion has already been taken into account.

R2-2208194 Miscellaneous corrections on 38.304 for SL relay Ericsson (Rapporteur) CR Rel-17 38.304 17.1.0 0273 - F NR\_SL\_relay-Core Late

* Not provided (no impact to 38.304 was identified)

[R2-2208484](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208484%20RRC%20corrections%20for%20sidelink%20relay.docx) RRC corrections for sidelink relay Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3427 - F NR\_SL\_relay-Core

* Revised in R2-2208813
* [AT119-e][414][Relay] Rel-17 relay RRC (Huawei)

Scope: Check and update the rapporteur CR in R2-2208484 to take account of decisions of this meeting. Evaluate the proposals discussed in R2-2208795 for merging into the CR.

Intended outcome: Agreeable CR in R2-2208813 and report in R2-2208828

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208828](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208828.doc) Report of [AT119-e][414][Relay] Rel-17 relay RRC (Huawei) Huawei, HiSilicon discussion Rel-17 NR\_SL\_relay-Core

[6/15]Proposal 1: Rx UE reports SL-DRX-based discovery message reception in SL-RxInterestedGC-BC-Dest-r17, and the UE can set QoS info in sl-RxInterestedQoS-InfoList-r17 by implementation as long as it does not overlap with non-default QoS.

Discussion:

Huawei clarify that the low support is because this option was introduced during the discussion, and the proposal has no spec impact.

OPPO understand there is no ASN.1 impact, but they wonder if something should change in the procedural text. Huawei foresee that some clarification in the field description of the destination list could be useful.

[15/15]Proposal 2: A UE capable of L2 Remote UE can perform discovery procedure when configured with measurement object associated to L2 U2N Relay UEs without restriction of threshold condition, which can be achieved by gNB implementation, i.e. gNB does not to configure the threshHighRemote to the concerned UE.

[14/15]Proposal 3: In 5.8.9.10.4, clarify that the L2 U2N Remote UE in RRC\_CONNECTED initiates the RRC connection re-establishment only if T301 is not running.

[9/15]Proposal 4: The proposal (in R2-2208256) of removing SL-MeasResultListRelay-17 from PC5-RRC module and defining it as NR RRC IE is not pursued.

Discussion:

Samsung understand that companies do not prefer an NBC change, but they would like to see a BC correction this meeting, e.g., by dummifying the current field. OPPO agree with Samsung but can accept majority view.

Samsung think the issue is well understood and they can follow the majority view.

[15/15]Proposal 5: For the SIBs cannot be requested via DedicatedSIBRequest, network ensures CONNECTED Relay UE have the SIBs which may be requested by the Remote UEs by NW implementation (No spec change).

[15/15]Proposal 6: The prohibit timer for the SIB request from idle/inactive Remote UE is not pursued.

[14/15]Proposal 7: No further discussion on whether/how to differentiate ProSe-based direct communication and V2X communication in RAN2, unless RAN2 gets a request from other WGs.

[13/15]Proposal 8: No further distinguish on whether Relay UE’s PCell is changed or not when IDLE/INACTIVE Remote UE receives NotificationMessageSidelink indicating Relay UE’s HO (No spec change).

[12/14]Proposal 9: Revise the T390 stop condition of “upon cell change due to relay (re)selection” to “upon relay (re)selection”

Discussion:

Xiaomi think P9 has a problem with legacy behaviour, because the remote UE will now access more easily than the legacy UE.

OPPO think it is a bit hard to follow the comment, because the change does not affect the procedural text. They also think in the legacy spec, there already are cases where the timer stops upon cell (re)selection, and they see a gap between the legacy spec and the current one. They understand that this describes behaviour that is already specified in the procedural text.

Huawei clarify that the intention of the proposal is to align with legacy behaviour, i.e., stop on cell selection.

Xiaomi think the procedural text is aligned with the current description.

[8/12]Proposal 10: Upon released from connected to inactive state, a Remote UE follows the legacy step of “enter RRC\_INACTIVE and perform cell selection as specified in TS 38.304” (No spec change).

Discussion:

Huawei clarify that the remote UE will perform cell selection, i.e., it will release the PC5 connection.

Xiaomi agree there should be no spec impact.

Apple think this proposal changes the UE behaviour, and this may be a point where the spec is not aligned with earlier agreements for relay (re)selection to be independent of cell (re)selection. Huawei indicate there was no agreement on RRCRelease to RRC\_INACTIVE for this case.

Ericsson think we should not re-discuss an area where there is no agreement from before. Apple interpret the proposal as new behaviour.

Nokia think if we do not accept the proposal, the status quo is that an idle/inactive remote UE selects a relay UE if certain thresholds are not met. They see Apple as proposing an enhancement for the reselection behaviour.

Proposal 11: In TS 38.306, update the description of supportedBandCombListPerBC-SL-RelayDiscovery-r17/supportedBandCombListPerBC-SL-NonRelayDiscovery-r17 as “Indicates, for a particular Uu band combination, the PC5 Relay discovery and non-Relay discovery band combination(s) on which the UE supports simultaneous transmission/reception of PC5 data (Relay discovery or non-Relay discovery) and Uu uplink/downlink respectively.”

Discussion:

Ericsson understand that there was a discussion of the capability filter under SL\_enh. OPPO think our action is dependent on a reply to an LS to RAN1.

Agreements:

Rx UE reports SL-DRX-based discovery message reception in SL-RxInterestedGC-BC-Dest-r17, and the UE can set QoS info in sl-RxInterestedQoS-InfoList-r17 by implementation as long as it does not overlap with non-default QoS.

[15/15]Proposal 2: A UE capable of L2 Remote UE can perform discovery procedure when configured with measurement object associated to L2 U2N Relay UEs without restriction of threshold condition, which can be achieved by gNB implementation, i.e. gNB does not to configure the threshHighRemote to the concerned UE.

[14/15]Proposal 3: In 5.8.9.10.4, clarify that the L2 U2N Remote UE in RRC\_CONNECTED initiates the RRC connection re-establishment only if T301 is not running.

[9/15]Proposal 4: The proposal (in R2-2208256) of removing SL-MeasResultListRelay-17 from PC5-RRC module and defining it as NR RRC IE is not pursued.

[15/15]Proposal 5: For the SIBs cannot be requested via DedicatedSIBRequest, network ensures CONNECTED Relay UE have the SIBs which may be requested by the Remote UEs by NW implementation (No spec change).

[15/15]Proposal 6: The prohibit timer for the SIB request from idle/inactive Remote UE is not pursued.

[14/15]Proposal 7: No further discussion on whether/how to differentiate ProSe-based direct communication and V2X communication in RAN2, unless RAN2 gets a request from other WGs.

[13/15]Proposal 8 (modified): No further distinction on whether Relay UE’s PCell is changed or not when IDLE/INACTIVE Remote UE receives NotificationMessageSidelink indicating Relay UE’s HO (No spec change).

[12/14]Proposal 9 (modified): Revise the T390 stop condition of “upon cell change due to relay (re)selection” to “upon relay (re)selection” in section 7.1.1. This proposal does not affect the procedural text.

Agreement:

Proposal 11: In TS 38.306, update the description of supportedBandCombListPerBC-SL-RelayDiscovery-r17/supportedBandCombListPerBC-SL-NonRelayDiscovery-r17 as “Indicates, for a particular Uu band combination, the PC5 Relay discovery and non-Relay discovery band combination(s) on which the UE supports simultaneous transmission/reception of PC5 data (Relay discovery or non-Relay discovery) and Uu uplink/downlink respectively.”

* [Post119-e][403][Relay] Relay 38.306 CR (Qualcomm)

Scope: Draft a CR to 38.306 reflecting agreements of this meeting.

Intended outcome: Endorsed CR for merge into mega CR

Deadline: Short (for RP), to be coordinated with 38.306 CR discussion

[R2-2208813](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208813_38331_CR3466_(Rel-17)_RRC%20corrections%20for%20SL%20relay.docx) RRC corrections for sidelink relay Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3466 - F NR\_SL\_relay-Core

* [Post119-e][404][Relay] Relay 38.331 CR (Huawei)

Scope: Check the rapporteur CR in R2-2208813.

Intended outcome: Agreed CR

Deadline: Short (for RP)

### 6.7.2 Essential corrections

No documents should be submitted to 6.7.2. Please submit to 6.7.2.x.

#### 6.7.2.1 Stage 2 corrections

Including impact to 38.300.

* [AT119-e][415][Relay] Rel-17 relay stage 2 (MediaTek)

Scope: Evaluate the proposals in the following tdocs and merge into a rapporteur CR:

* R2-2207079
* R2-2207203
* R2-2207450
* R2-2207513
* R2-2208004
* R2-2208193
* R2-2208485
* R2-2207201

Intended outcome: Agreeable CR to 38.300 in R2-2208814 and endorsable TP to 37.985 in R2-2208815

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208791](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208791%20Summary%20of%20Phase-1%20%5bAT119%5d%5b415%5d%5bRelay%5d%20Rel-17%20relay%20stage%202%20(MediaTek).docx) Summary of Phase-1 discussion [AT119-e][415][Relay] Rel-17 relay stage 2 MediaTek Inc. discussion Rel-17 NR\_SL\_relay-Core

* Noted (email discussion [AT119-e][415])

[R2-2208814](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208814%20Correction%20CR%20to%2038300%20for%20SL%20Relay.docx) Correction on stage 2 for sidelink relay MediaTek Inc., Nokia, Nokia Shanghai Bell CR Rel-17 38.300 17.1.0 0550 - F NR\_SL\_relay-Core

* Agreed with a revision to add the CR number to the coversheet

[R2-2209025](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2209025%20Correction%20CR%20to%2038300%20for%20SL%20Relay.docx) Correction on stage 2 for sidelink relay MediaTek Inc., Nokia, Nokia Shanghai Bell CR Rel-17 38.300 17.1.0 0550 1 F NR\_SL\_relay-Core

* Agreed

[R2-2208815](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208815%20TP%20to%20TR37.985%20for%20SL%20Relay.docx) TP to introduce Rel-17 sidelink relay and discovery in TR 37.985 ZTE, Sanechips, MediaTek Inc. draftCR Rel-17 37.985 17.1.1 NR\_SL\_relay-Core

* Endorsed
* [Post119-e][405][Relay] LS to RAN1 on TP to 37.985 (ZTE)

Scope: Draft an LS to RAN1 introducing the endorsed TP in R2-2208815, and inviting them to decide whether to include it in TR 37.985.

Intended outcome: Approved LS

Deadline: Short (not for RP)

Stage 2 CRs (to be considered in email discussion [415])

[R2-2207079](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38300_0496_R2-2207079-Correction%20on%20miscellaneous%20issues%20for%20NR%20sidelink%20relay_clean.docx) Correction on miscellaneous issues for NR sidelink relay in 38300 OPPO CR Rel-17 38.300 17.1.0 0496 - F NR\_SL\_relay-Core

[R2-2207203](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207203%20Corrections%20for%20path%20switch%20in%2038.300.docx) Corrections for path switch in 38.300 ZTE CR Rel-17 38.300 17.1.0 0502 - F NR\_SL\_relay-Core

[R2-2207450](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207450%20Stage%202%20CR%20for%20SL%20relay_v1.docx) Correction on user plane and control plan procedures for U2N relay in Stage 2 Apple CR Rel-17 38.300 17.1.0 0510 - F NR\_SL\_relay-Core

[R2-2207513](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38300_CR0513_(Rel-17)_R2-2207513.docx) Corrections on Sidelink Relay CATT CR Rel-17 38.300 17.1.0 0513 - F NR\_SL\_relay-Core

[R2-2208004](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208004%20Draft%20CR38300-corrections.docx) Miscellaneous corrections on SL Relay specification Nokia, Nokia Shanghai Bell draftCR Rel-17 38.300 17.1.0 F NR\_SL\_relay-Core

[R2-2208193](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38.300_CR0534(Rel-17)_R2-2208193-%20Miscellaneous%20corrections%20on%2038.300%20for%20SL%20relay.docx) Miscellaneous corrections on 38.300 for SL relay Ericsson CR Rel-17 38.300 17.1.0 0534 - F NR\_SL\_relay-Core

[R2-2208485](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208485%20Stage%202%20clarifications%20on%20sidelink%20relay.docx) Stage2 clarifications on sidelink relay Huawei, HiSilicon draftCR Rel-17 38.300 17.1.0 NR\_SL\_relay-Core

TP to 37.985 (to be considered in email discussion [415])

[R2-2207201](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207201%20draft%20TP%20to%20introduce%20Rel-17%20sidelink%20relay%20and%20discovery%20for%20TR%2037.985.docx) TP to introduce Rel-17 sidelink relay and discovery in TR 37.985 ZTE draftCR Rel-17 37.985 17.1.1 NR\_SL\_relay-Core

#### 6.7.2.2 Control plane corrections

Including connection management, SI delivery, paging, access control for remote UE, and service continuity.

AI summary

[R2-2208795](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208795%20Summary%20of%20relay%20control%20plane%20corrections%20(Huawei).doc) [Pre119-e][403] Summary of relay control plane corrections (Huawei) Huawei, HiSilicon discussion Rel-17 NR\_SL\_relay-Core

Easy:

[Potential asn.1 impact] Proposal 5: Introduce a new field in SUI for Rx UE to report SL-DRX-based discovery message reception, wherein the monitored DST L2 ID should be included.

Proposal 2: RAN2 confirms the Remote UE can use pre-config for sidelink discovery and unicast communication before acquisition of SIB12 from the Relay UE.

Proposal 29: RAN2 confirms during path switch (T420 is running), UE can use exceptional pool for sidelink communication (same as Rel-16 V2X).

Proposal 13: Clarify in spec, upon reception of NotificationMessageSidelink, for CONNECTED Remote UE, if T301 is running, apply 6.3.7.7 to stop T301, otherwise initiate RRC reestablishment.

Proposal 11: The spec allows gNB not to configure the threshHighRemote to concerned CONNECTED Remote UE, so that the Remote UE performs discovery procedure without restriction of threshold condition when configured with measurement of L2 U2N Relay UEs, i.e. leave to NW implementation.

Discussion:

Ericsson have a comment on P5: They understand that this is mainly for SL and Uu DRX alignment, and they understand that the UE will apply the default DRX configuration, which the gNB already knows, so they think the reporting is not needed. OPPO indicate that the gNB needs the L2ID for the offset calculation. Ericsson think the gNB already has the L2ID, but OPPO understand that the currently reported L2ID is for Tx side and this is for Rx side.

Nokia think on P11, it is not clear what the proposal means; is there spec impact? Ericsson have the same question. Huawei clarify that there is no impact to the signalling, but there is something in the procedure text; the intention of the proposal is to link the measurement configuration with the AS conditions for discovery.

LG think there is a numbering mistake in P13, and they find the “otherwise” confusing because it means the remote UE doesn’t do anything after the T301 expiration. Huawei clarify that 6.3.7.7 should be 5.3.7.7, and they intend “otherwise” to mean “if T301 is not running”. LG understand after stopping T301, the UE can initiate re-establishment, and think we should have “and” instead of “otherwise”. Huawei intended re-establishment if T301 is not running.

Xiaomi think P2 should be scoped only to the OOC remote UE. Chair thinks we did not require reception of SIB12 on Uu for the IC remote UE. Xiaomi thinks further discussion would be needed.

Apple think the current P2 is OK, and they have a question on P29; for legacy handover we have the handover command including the exceptional pool for the target cell, but here there is no cell change; will the gNB still include the exceptional pool? Huawei understand Rel-16 does not differentiate intra- and inter-cell HO in this respect; they did not intend any special optimisation for this case. Apple want to clarify it is up to network implementation to include the exceptional pool. Apple are OK with the proposal.

OPPO, Qualcomm, and CATT agree with the current P2.

vivo wonder if P29 should apply only to mode 1. OPPO agree. Apple also agree,

Agreements:

Proposal 2: RAN2 confirms the Remote UE can use pre-config for sidelink discovery and unicast communication before acquisition of SIB12 from the Relay UE.

Proposal 29 (modified): RAN2 confirms during path switch (T420 is running), UE can use exceptional pool for sidelink communication in mode 1 (same as Rel-16 V2X).

The following proposals can be further discussed in the RRC offline [414]:

[Potential asn.1 impact] Proposal 5: Introduce a new field in SUI for Rx UE to report SL-DRX-based discovery message reception, wherein the monitored DST L2 ID should be included.

Proposal 11: The spec allows gNB not to configure the threshHighRemote to concerned CONNECTED Remote UE, so that the Remote UE performs discovery procedure without restriction of threshold condition when configured with measurement of L2 U2N Relay UEs, i.e. leave to NW implementation.

Proposal 13 (modified): Clarify in spec, upon reception of NotificationMessageSidelink, for CONNECTED Remote UE, if T301 is running, apply 5.3.7.7 to stop T301, and initiate RRC reestablishment.

[Potential asn.1 impact] Proposal 9: RAN2 to discuss whether to pursue the NBC change in R2-2208256.

[Potential asn.1 impact] Proposal 1: For the SIBs cannot be request via DedicatedSIBRequest, discuss which option to choose:

‐ Option1: network ensures connected Relay UE have the SIBs, e.g. by always providing them to the Relay UE via RRCReconfiguration.

‐ Option2: to add new Uu signalling to allow connected Relay UE to indicate those SIB types requested by Remote UE.

[Potential asn.1 impact] Proposal 4: RAN2 to discuss whether a prohibit timer is needed when idle/inactive Remote UE requests SIB from a Relay UE, and whether the Relay UE (in connected state) can request SIB for a Remote UE when its T350 is running.

[Potential asn.1 impact] Proposal 6: ProSe-based direct communication is not in the scope of Rel-17 SL relay, whether/how to differentiate ProSe-based direct communication and V2X communication from AS perspective can be discussed in RAN2 if SA2 requests.

Proposal 12: No further distinguish if Relay UE’s PCell is changed or not after Remote UE receives NotificationMessageSidelink indicating Relay UE’s HO.

Proposal 14: For T390, revise the stop condition “upon cell change due to relay (re)selection” to “upon relay (re)selection”.

Proposal 17a: When RRC connection is suspended, L2 U2N remote UE determines whether to release or maintain PC5-RRC connection.

If P9 results in taking an NBC change, it will be a separate CR with appropriate language on the coversheet.

Discuss if time allows

[Potential asn.1 impact] Proposal 9: RAN2 to discuss whether to pursue the NBC change in R2-2208256.

[Potential asn.1 impact] Proposal 1: For the SIBs cannot be request via DedicatedSIBRequest, discuss which option to choose:

‐ Option1: network ensures connected Relay UE have the SIBs, e.g. by always providing them to the Relay UE via RRCReconfiguration.

‐ Option2: to add new Uu signalling to allow connected Relay UE to indicate those SIB types requested by Remote UE.

[Potential asn.1 impact] Proposal 4: RAN2 to discuss whether a prohibit timer is needed when idle/inactive Remote UE requests SIB from a Relay UE, and whether the Relay UE (in connected state) can request SIB for a Remote UE when its T350 is running.

[Potential asn.1 impact] Proposal 6: ProSe-based direct communication is not in the scope of Rel-17 SL relay, whether/how to differentiate ProSe-based direct communication and V2X communication from AS perspective can be discussed in RAN2 if SA2 requests.

Proposal 12: No further distinguish if Relay UE’s PCell is changed or not after Remote UE receives NotificationMessageSidelink indicating Relay UE’s HO.

Proposal 14: For T390, revise the stop condition “upon cell change due to relay (re)selection” to “upon relay (re)selection”.

Proposal 17a: When RRC connection is suspended, L2 U2N remote UE determines whether to release or maintain PC5-RRC connection.

Discussion:

Huawei would like to clarify how high the bar is for NBC changes (e.g. P9). They consider that the change is reasonable, but the specification is not completely broken without it.

MediaTek support P9 and think the current implementation is very strange. OPPO agree.

Ericsson think the ASN.1 works as it is and this is a kind of polish. Qualcomm agree.

InterDigital think this would be fine if it were not NBC, but there seems to be no functional problem and they would prefer not to make the change.

Samsung think the current location of the IE in PC5-RRC is weird.

Nokia think we will have other NBC changes anyway, and RAN plenary guidance was that the current version is not for implementation, so they can accept this change now; otherwise we have the strange arrangement forever. They agree that functionally it is not broken.

Suggest to agree the changes in-principle (can be double checked during CR update) (Not challenged much during summary review)

Proposal 3: Change #2 in R2-2207202 is to be merged into the Rapp CR.

Proposal 7: P1 in R2-2207362 is to be implemented in the Rapp CR.

Proposal 8: The changes in R2-2208255 are to be merged into the Rapp CR.

Proposal 10: The changes in R2-2207763 are to be merged into the Rapp CR (removing “configured by upper layers from change #2”).

Proposal 15: Fix the typo “trigggered” in the Rapp CR.

Proposal 17: P2 and P3 in R2-2207536 is to be merged into Rapp CR.

Proposal 18: The changes in R2-2208359 are to be merged into Rapp CR.

Proposal 19: The changes in R2-2208360 are to be merged into Rapp CR.

Proposal 20: The change in R2-2208195 is to be merged into the Rapp CR.

Proposal 21: In TS 38.306, update the description of “supportedBandCombListPerBC-SL-RelayDiscovery-r17, supportedBandCombListPerBC-SL-NonRelayDiscovery-r17” to align the intention “the UE supports simultaneous transmission of PC5 data (discovery or non-Relay discovery) and Uu uplink or simultaneous reception of PC5 data (discovery or non-Relay discovery) and Uu downlink“.

Proposal 22: The change #1,4,5 in R2-2207019 are to be merged into the Rapp CR.

Proposal 23: The changes in R2-2207179 are to be merged into the Rapp CR.

Proposal 24: The change #3,4,5,6 in R2-2207515 are to be merged into Rapp CR.

Proposal 25: The changes #2,3,4,5,6,7,9,10 in R2-2207764 are to be merged into the Rapp CR.

Proposal 26: The change in R2-2208196 is to be merged into Rapp CR.

Proposal 27: The first part of change #1 (applying sl-L2RemoteUE-Config) and change #2,3,4,5 in R2-2208358 are to be merged into Rapp CR.

Proposal 28: The changes in R2-2208478 are to be merged into Rapp CR.

Further discuss the proposed change during CR update.

Proposal 16: The TP in R2-2207514 is to be merged into Rapp CR.

Discussion:

Chair suggests we take the “in-principle” proposals into the RRC CR discussion.

OPPO think the intention of most of the CRs is agreeable and the details can be checked in the RRC CR discussion, but they have a concern about P20, where they think the issue is coupled with the capability discussion about the discovery BC list. OPPO also think for P23, there is a condition in the spec already for any change in the remote UE information, to initiate the message.

ZTE agree with most of the changes, but for P3 they think change 1 in R2-2207202 is also necessary, and they think some discussion is needed on P16. Huawei understand that change 1 of P3 is redundant, but further checking during CR update would be OK.

Xiaomi indicate that on P23, the general description is aligned with OPPO’s understanding, but the detailed procedural requirements are not. OK to check during discussion.

MediaTek understand on P26 that there is a similar proposal in stage 2, so we should align between the discussions; we may not need redundant text in both stage 2 and stage 3.

Agreement:

The proposals above under “in-principle” and “further discuss” are taken into the RRC CR discussion [414]. Can start from the proposals as a baseline, but concerns can be expressed in the discussion.

If P21 is agreed, produce a separate CR for 38.306.

Covered in summary

[R2-2207018](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207018%20-%20Discussion%20on%20left%20issues%20for%20CP.docx) Discussion on left issues for CP OPPO discussion Rel-17 NR\_SL\_relay-Core

[R2-2207019](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38331_CR3207_(Rel-17)_R2-2207019%20-%20Correction%20for%20U2N%20Relay.docx) Correction for U2N Relay OPPO CR Rel-17 38.331 17.1.0 3207 - F NR\_SL\_relay-Core

[R2-2207176](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207176%2038.331%20Correction%20on%20relay%20UE%20mobility%20handling.docx) Correction on relay UE mobility handling Xiaomi CR Rel-17 38.331 17.1.0 3227 - F NR\_SL\_relay-Core

[R2-2207177](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207177%2038.331%20Correction%20on%20SI%20request.docx) Correction on SI request Xiaomi CR Rel-17 38.331 17.1.0 3228 - F NR\_SL\_relay-Core

[R2-2207178](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207178%2038.331%20Correction%20on%20SIB12%20forwarding.docx) Correction on SIB12 forwarding Xiaomi CR Rel-17 38.331 17.1.0 3229 - F NR\_SL\_relay-Core

[R2-2207179](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207179%2038.331%20Miscellaneous%20correction.docx) Miscellaneous correction Xiaomi CR Rel-17 38.331 17.1.0 3230 - F NR\_SL\_relay-Core

[R2-2207200](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38331_CR3319_(Rel-17)_R2-2207200%20Correction%20on%20SUI%20message%20to%20differentiate%20V2X%20and%20ProSe%20service.docx) Correction on SUI message to differentiate V2X and ProSe service ZTE CR Rel-17 38.331 17.1.0 3319 - F NR\_SL\_relay-Core

[R2-2207202](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207202%20Correction%20on%20remote%20UEí) Correction on remote UE’s System Information acquisition ZTE CR Rel-17 38.331 17.1.0 3232 - F NR\_SL\_relay-Core

[R2-2207362](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207362.doc) Left issues for SUI message SHARP Corporation discussion NR\_SL\_relay-Core

[R2-2207451](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207451%20RRC%20CR%20for%20RLC%20configuration%20for%20remote%20UE%20in%20path%20switch%20.docx) Correction on PC5 RLC channel configuration for L2 U2N relay Apple CR Rel-17 38.331 17.1.0 3264 - F NR\_SL\_relay-Core

[R2-2207452](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207452%20RRC%20CR%20for%20remote%20UE%20SidelinkUEInformation.docx) Correction on SUI procedure for L2 remote UE Apple CR Rel-17 38.331 17.1.0 3265 - F NR\_SL\_relay-Core

[R2-2207514](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207514_Disussion%20on%20SRAP%20entity%20release_vf.docx) Disussion on SRAP entity release CATT discussion Rel-17 NR\_SL\_relay\_enh-Core

[R2-2207515](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38331_CR3273_(Rel-17)_R2-2207515%2038331_Miscellaneous%20Corrections%20on%20Sidelink%20RRC%20procedures-vf.docx) Miscellaneous Corrections on Sidelink RRC procedures CATT CR Rel-17 38.331 17.1.0 3273 - F NR\_SL\_relay\_enh-Core

[R2-2207536](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207536%20Correction%20on%20RRC%20connection%20suspension%20of%20remote%20UE.doc) Correction on RRC connection suspension of remote UE Sharp discussion

[R2-2207651](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207651-%20CR3301%20Correction%20for%20notification%20message%20with%20re-establishment%20v1.0.docx) Correction for notification message with re-establishment Lenovo CR Rel-17 38.331 17.1.0 3301 - F NR\_SL\_relay-Core

[R2-2207763](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38.331_CR3309_(Rel-17)_R2-2207763_Correction%20on%20measurement%20reporting%20procedure%20for%20L2%20U2N%20Relay.docx) Correction on measurement reporting procedure for L2 U2N Relay vivo CR Rel-17 38.331 17.1.0 3309 - F NR\_SL\_relay-Core

[R2-2207764](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38.331_CR3310_(Rel-17)_R2-2207764_Miscellaneous%20corrections%20on%20L2%20U2N%20CP%20procedures.docx) Miscellaneous corrections on L2 U2N CP procedures vivo CR Rel-17 38.331 17.1.0 3310 - F NR\_SL\_relay-Core

[R2-2208195](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38.331_CR3376(Rel-17)_R2-2208195-%20Clarification%20on%20capability%20filter%20for%20sidelink%20relay.docx) Clarification on capability filter for sidelink relay Ericsson CR Rel-17 38.331 17.1.0 3376 - F NR\_SL\_relay-Core

[R2-2208196](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38.331_CR3377(Rel-17)_R2-2208196-%20Clarification%20on%20SRB3%20configuration%20for%20sidelink%20relay.docx) Clarification on SRB3 configuration for sidelink relay Ericsson CR Rel-17 38.331 17.1.0 3377 - F NR\_SL\_relay-Core

[R2-2208197](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38.331_CR3378(Rel-17)_R2-2208197-%20Clarification%20on%20the%20prohibit%20timer%20for%20on-demand%20SIB%20for%20SL%20relay.docx) Clarification on the prohibit timer for on-demand SIB for SL relay Ericsson CR Rel-17 38.331 17.1.0 3378 - F NR\_SL\_relay-Core

[R2-2208215](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208215%20Clarifications%20on%20PC5%20UE%20capabilities.docx) Clarifications on UE PC5 capabilities for sidelink Relay Nokia, Nokia Shanghai Bell draftCR Rel-17 38.306 17.1.0 F NR\_SL\_relay-Core

[R2-2208255](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208255%20RRC%20CR3391%20SidelinkUEInformationNR%20for%20SL%20relay.docx) Correction on SidelinkUEInformationNR for SL relay Samsung CR Rel-17 38.331 17.1.0 3391 - F NR\_SL\_relay-Core

[R2-2208256](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208256%20RRC%20CR3392%20measurement%20report%20of%20L2%20U2N%20relay%20UE.docx) Correction on measurement report of L2 U2N relay UE Samsung CR Rel-17 38.331 17.1.0 3392 - F NR\_SL\_relay-Core

[R2-2208358](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208358%20Clarifications%20on%20RRC%20procedural%20text%20for%20L2%20U2N%20relay%20operation.docx) Clarifications on RRC procedural text for L2 U2N relay operation ASUSTeK CR Rel-17 38.331 17.1.0 3410 - F NR\_SL\_relay-Core

[R2-2208359](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208359%20Correction%20on%20PC5-RRC%20connection%20release.docx) Correction on PC5-RRC connection release ASUSTeK CR Rel-17 38.331 17.1.0 3411 - F NR\_SL\_relay-Core

[R2-2208360](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208360%20Clarification%20on%20radio%20resource%20release%20on%20L2%20U2N%20Remote%20UE.docx) Clarification on radio resource release on L2 U2N Remote UE ASUSTeK CR Rel-17 38.331 17.1.0 3412 - F NR\_SL\_relay-Core

[R2-2208478](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208478.docx) Correction on rlf-TimersAndConstants Google Inc. CR Rel-17 38.331 17.1.0 3425 - F NR\_SL\_relay-Core

[R2-2208486](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208486%20Clarification%20on%20L2%20Remote%20UE%20threshold%20conditions%20for%20service%20continuity.docx) Clarification on L2 Remote UE threshold conditions for service continuity Huawei, HiSilicon draftCR Rel-17 38.331 17.1.0 NR\_SL\_relay-Core

#### 6.7.2.3 User plane corrections

Including SRAP aspects and QoS.

SRAP (to be considered in email discussion [412])

[R2-2207453](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207453%2038.351%20CR%20for%20SRAP%20operations.docx) Correction on SRAP header handling in L2 Relay UE Apple CR Rel-17 38.351 17.1.0 0007 - F NR\_SL\_relay-Core

[R2-2208361](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208361%20SRAP%20data%20PDU%20discard%20examination.docx) SRAP data PDU discard examination ASUSTeK CR Rel-17 38.351 17.1.0 0008 - F NR\_SL\_relay-Core

[R2-2208487](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208487%20Discussion%20on%20SRAP%20entity%20handling.docx) Discussion on SRAP entity handling Huawei, HiSilicon discussion Rel-17 NR\_SL\_relay-Core

PDCP (to be considered in email discussion [412])

[R2-2207516](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38323_CR0097_(Rel-17)_R2-2207516.docx) Correction on PDCP for L2 U2N Relay CATT CR Rel-17 38.323 17.1.0 0097 - F NR\_SL\_relay-Core

* Revised in R2-2208826

[R2-2208826](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38323_CR0097_(Rel-17)_R2-2208826_Correction%20on%20PDCP%20for%20%5b412%5d.docx) Correction on PDCP for L2 U2N Relay CATT, OPPO CR Rel-17 38.323 17.1.0 0097 1 F NR\_SL\_relay-Core

* Agreed

MAC (to be considered in email discussion [413])

[R2-2208156](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208156%20Draft%20CR38321%20-%20Correction%20to%20logical%20channel%20selection%20for%20DRX%20in%20sidelink%20Relay.docx) Correction to logical channel selection for DRX in sidelink Relay Nokia, Nokia Shanghai Bell draftCR Rel-17 38.321 17.1.0 NR\_SL\_relay-Core

#### 6.7.2.4 Discovery and re- selection

Including 5G ProSe Direct Discovery for the non-relaying case. Re-using LTE discovery and re/selection as baseline.

AI summary

[R2-2208796](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208796%20Summary%20of%20AI%206.7.2.4%20on%20Discovery%20and%20re-selection_v02_Rap.docx) Summary of 6.7.2.4 on Discovery and re-selection Lenovo discussion Rel-17 NR\_SL\_relay-Core

[easy decision]

Proposal 1: RAN2 wait for SA2‘s reply LS before concluding on the case that AS layer is not aware of cast type for a discovery message.

Proposal 2a: The ‘relay reselection’ should be added in timer table in section 7.1.1 as a stop condition of T300 according to the current procedure text.

Proposal 2b: If Proposal 2a is agreed, ‘the (re)selected L2 U2N Relay UE becomes unsuitable’ as a stop condition for T300 should be removed. And update CR R2-2207654.

Discussion:

OPPO agree in P1 that waiting for SA2 is right, but think we could face some unsolvable problems if we do not address the possibility now. On P2b, OPPO think there is overlap with the language from relay reselection triggers; and on P3a, they think we should look into the details in RAN2 first.

MediaTek think that from RAN2 perspective, we cannot say there is a problem with the DCI scheduling; if we want to refine P3a, we can “inquire” rather than “inform”.

LG think in P3a, RAN1 may not be able to change the DCI format now, and we should see if there is a RAN2 solution. Lenovo indicate that the resource pool is in RAN2 spec, but the RAN1 spec does not take account of it in the DCI format. Apple agree with LG.

vivo think P3a is an issue RAN2 caused for RAN1, and since RAN1 have no TUs for this WI, it is not realistic to originate a solution in RAN1; they think RAN2 cannot solve the problem except by disabling the dedicated scheduled pool. They think we could take MediaTek’s suggestion and inquire for a solution from RAN1 rather than try to dictate what they do. vivo think RAN1 will change something about the field description in the DCI format, not the bits on the air.

Ericsson agree with OPPO that RAN2 caused a problem for RAN1, and they think RAN2 should investigate the problem more deeply before updating RAN1.

vivo are fine with P2a/P2b, but think that we defined conditions for T301 and T319 as well, and we have the same language for T301; they think we might want to align terminology in the descriptions. OPPO think we should have a further check on T301 since the current CR is limited to T300.

Agreements:

Proposal 1: RAN2 wait for SA2‘s reply LS before concluding on the case that AS layer is not aware of cast type for a discovery message.

Proposal 2a: The ‘relay reselection’ should be added in timer table in section 7.1.1 as a stop condition of T300 according to the current procedure text.

Proposal 2b: If Proposal 2a is agreed, ‘the (re)selected L2 U2N Relay UE becomes unsuitable’ as a stop condition for T300 should be removed. And update CR R2-2207654.

Impacts to be taken into the RRC CR and discussed in the corresponding email discussion [414].

[to be discussed]

Proposal 3a: RAN2 to inform RAN1 of the introduction of mode-1 dedicated discovery TX pool (i.e. sl-DiscTxPoolScheduling) and the problem that current DCI format 3\_0 fails to schedule the resources in dedicated discovery TX pool.

Proposal 3b: If Proposal 3a is agreed, RAN2 to discuss whether the LS includes the following two cases in which sl-DiscTxPoolScheduling is configured.

- Case 1: UE is configured to transmit only NR SL discovery;

- Case 2: UE is configured to transmit both NR SL discovery and NR SL communication.

Proposal 4: RAN2 to discuss whether SD-RSRP should be defined as ‘PSSCH-RSRP where PSSCH carries discovery message’. If yes, adopt TP in R2-2207967 as baseline.

Proposal 5a: RAN2 to discuss whether new assistance information similar to SL-TrafficPatternInfo should be introduced in UEAssistanceInformation message to assist gNB to configure SL CG type 1 for discovery.

Proposal 5b: If proposal 5a is agreed, RAN2 to discuss whether the assistance information can include Discovery message periodicity, Timing offset and the message size information. If yes, adopt TP in R2-2208228 as baseline.

* [AT119-e][418][Relay] Remaining proposals on discovery and (re)selection (Lenovo)

Scope: Discuss P3a/P3b/P4/P5a/P5b of R2-2208796 and attempt to reach agreements.

Intended outcome: Report to CB session in R2-2208804

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208804](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208804%20%5bAT119-e%5d%5b418%5d%5bRelay%5d%20discovery%20and%20(re)selection%20(Lenovo)_v21_Summary2.docx) [AT119-e][418][Relay] Remaining proposals on discovery and (re)selection (Lenovo) Lenovo discussion Rel-17 NR\_SL\_relay-Core

* Revised in R2-2208934

[R2-2208934](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208934%20%5bAT119-e%5d%5b418%5d%5bRelay%5d%20discovery%20and%20(re)selection%20(Lenovo)_v22_Summary3.docx) [AT119-e][418][Relay] Remaining proposals on discovery and (re)selection (Lenovo) Lenovo discussion Rel-17 NR\_SL\_relay-Core

Proposal 1a (14/15): In order to cover the following use cases:

- Case 1: UE is configured to transmit only NR SL discovery;

- Case 2: UE is configured to transmit both NR SL discovery and NR SL communication.

RAN2 to agree that the parameter I related to resource pool index in DCI Format 3\_0 in TS38.212 is the number of resource pools for transmission configured by the higher layer parameter sl-TxPoolScheduling, if configured, and sl-DiscTxPoolScheduling, if configured. And send LS to RAN1 based on the conclusion to ask if any concern.

Proposal 2 (12/14): RAN2 not to agree that SD-RSRP is defined as ‘PSSCH-RSRP where PSSCH carries discovery message’.

Proposal 3: R2-2208228 is noted.

Agreements:

In order to cover the following use cases:

- Case 1: UE is configured to transmit only NR SL discovery;

- Case 2: UE is configured to transmit both NR SL discovery and NR SL communication.

RAN2 to agree that the parameter I related to resource pool index in DCI Format 3\_0 in TS38.212 is the number of resource pools for transmission configured by the higher layer parameter sl-TxPoolScheduling, if configured, and sl-DiscTxPoolScheduling, if configured. And send LS to RAN1 based on the conclusion to ask if any concern.

R2-2208228 is noted.

* [Post119-e][401][Relay] LS to RAN1 on resource pool index in DCI format 3\_0 (vivo)

Scope: Draft an LS to RAN1 informing them of the conclusion under P1a in R2-2208934.

Intended outcome: Approved LS

Deadline: Short (not for RP)

Covered in summary

[R2-2207080](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207080%20Discussion%20on%20MAC%20filtering%20for%20reception%20of%20discovery%20message.docx) Discussion on MAC filtering for reception of discovery message OPPO discussion Rel-17 NR\_SL\_relay-Core

[R2-2207654](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207654%20-%20CR3302%20Correction%20for%20relay%20reselection%20while%20T300%20is%20running%20v1.0.docx) Correction for relay reselection while T300 is running Lenovo CR Rel-17 38.331 17.1.0 3302 - F NR\_SL\_relay-Core

[R2-2207765](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207765%20On%20the%20problem%20for%20mode-1%20dedicated%20discovery%20TX%20pool.docx) On the problem for mode-1 dedicated discovery TX pool vivo discussion Rel-17 NR\_SL\_relay-Core

[R2-2207766](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207766%20%5bDraft%5d%20LS%20on%20mode-1%20dedicated%20discovery%20transmission%20pool.docx) [Draft] LS on mode-1 dedicated discovery transmission pool vivo LS out Rel-17 NR\_SL\_relay-Core To:RAN1

[R2-2207967](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207967%20Clarification%20of%20SD-RSRP%20and%20SL-RSRP%20in%20TS%2038.331.docx) Clarification of SD-RSRP and SL-RSRP in TS 38.331 NEC Corporation CR Rel-17 38.331 17.1.0 3338 - F NR\_SL\_relay-Core

[R2-2208228](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208228%20Support%20of%20SL%20CG%20for%20discovery%20message.docx) Support of SL CG for discovery message Huawei, HiSilicon discussion Rel-17 NR\_SL\_relay-Core

* Noted

## 6.11 NR positioning enhancements

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

Tdoc Limitation: 6 tdocs

### 6.11.1 Organizational

Rapporteur input. Incoming LS etc. This AI is reserved for rapporteur and organizational inputs. For LSes that need action or have impact beyond taking into account by CR rapporteurs: One tdoc by contact company (one company) to address the LS and potential reply is considered Rapporteur Input and may be provided. Related documents and proposed responses from companies other than the contact company should be submitted to the corresponding technical agenda item.

Incoming LSs with RAN2 in Cc:

[R2-2206919](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2206919_R1-2205450.docx) Reply LS on lower Rx beam sweeping factor for latency improvement (R1-2205450; contact: Huawei) RAN1 LS in Rel-17 NR\_pos\_enh To:RAN4 Cc:RAN2

* Noted (email discussion [AT119-e][400])

Incoming LSs with action “take into account”

[R2-2206914](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2206914_R1-2205382.docx) Reply LS on the UE/TRP TEG framework (R1-2205382; contact: CATT) RAN1 LS in Rel-17 NR\_pos\_enh-Core To:RAN4, RAN2, RAN3

* Noted (email discussion [AT119-e][400])

[R2-2206916](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Docs\R2-2206916.zip) LS on updates of RRC parameters for Rel-17 positioning enhancements (R1-2205406; contact: CATT) RAN1 LS in Rel-17 NR\_pos\_enh-Core To:RAN2, RAN3 Cc:RAN4

* Noted (email discussion [AT119-e][400])

[R2-2206927](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2206927_R1-2205619.docx) Reply LS on expected AoA and AoD parameters (R1-2205619; contact: Nokia) RAN1 LS in Rel-17 NR\_pos\_enh-Core To:RAN2 Cc:RAN3

* Noted (email discussion [AT119-e][400])

[R2-2206945](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2206945_R4-2210601.docx) Further reply LS on condition for PRS measurement outside the MG (R4-2210601; contact: Huawei) RAN4 LS in Rel-17 NR\_pos\_enh-Core To:RAN1, RAN2

* Noted (email discussion [AT119-e][400])

[R2-2206947](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2206947_R4-2210604.docx) LS on switching time for SRS transmission outside initial UL BWP in RRC\_INACTIVE (R4-2210604; contact: Huawei) RAN4 LS in Rel-17 NR\_pos\_enh-Core To:RAN1, RAN2

* Noted (email discussion [AT119-e][400])

Incoming LS from RTCM

[R2-2206903](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2206903_Response%20LS%20from%20RTCM%20on%20GNSS%20integrity_2.docx) Response LS to RTCM SC134 on GNSS integrity (RTCM; contact: ESA) RTCM LS in Rel-17 NR\_pos\_enh-Core To:RAN2

* [AT119-e][419][POS] LS from RTCM (Ericsson)

Scope: Discuss the LS in R2-2206903 and determine what next steps are desirable from the positioning session point of view, targeting a future discussion with organisational leadership to determine the formal process if necessary.

Intended outcome: Report to CB session in R2-2208805

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208805](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208805.docx) [AT119-e][419][POS] LS from RTCM (Ericsson) Ericsson discussion Rel-17 NR\_pos\_enh-Core

Proposal 1 RAN2 to liaise with RTCM.

Proposal 2 The procedure to setup the liaison with RTCM is outside of RAN2 domain.

Agreements:

Proposal 1 RAN2 to liaise with RTCM.

Proposal 2 The procedure to setup the liaison with RTCM is outside of RAN2 domain.

LS in R2-2206946 and related documents (to be considered in summary of agenda item 6.11.2.6)

[R2-2206946](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2206946_R4-2210603.docx) LS on Tx TEG framework (R4-2210603; contact: CATT) RAN4 LS in Rel-17 NR\_pos\_enh-Core To:RAN1, RAN2, RAN3

[R2-2207099](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\37355_CR0352_(Rel-17)_R2-2207099.docx) Corrections on the RxTEG,TxTEG and RxTxTEG report in TS 37.355 CATT CR Rel-17 37.355 17.1.0 0352 - F NR\_pos\_enh-Core

[R2-2207100](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38331_CR3217_(Rel-17)_R2-2207100.docx) Corrections on the UE TxTEG report in TS 38.331 CATT CR Rel-17 38.331 17.1.0 3217 - F NR\_pos\_enh-Core

Rapporteur CRs

[R2-2207384](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207384%20Mscellaneous%20corrections%20for%20TS38.305.docx) Mscellaneous corrections for TS38.305 Intel Corporation CR Rel-17 38.305 17.1.0 0105 - F NR\_pos\_enh-Core

* [AT119-e][408][POS] Rel-17 positioning stage 2 (Intel)

Scope: Check and update the rapporteur CR in R2-2207384 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2207110
* R2-2208491
* R2-2208521
* R2-2208415
* R2-2208419
* R2-2208494

Intended outcome: Agreeable CR in R2-2208801 and report in R2-2208816

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208816](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208816%20_Report%20of%20AT119-408-v13%20Summary2.docx) Report of [AT119-e][408][POS] Rel-17 positioning stage 2 (Intel) Intel Corporation discussion Rel-17 NR\_pos\_enh-Core

Proposal 6: The CR R2-2208419 for TS366.305 is agreed.

Online discussion:

Proposal 2: R2-2207110 is not pursued. Company should submit RAN3 NRPPa related changes to RAN3 directly.

Proposal 4: Update the first change of R2-2208521 to “Periodic and Semi-persistent UL-SRS transmission for positioning can be supported in RRC\_INACTIVE” , and merge it into R2-2208801.

Discussion:

CATT think in Rel-16, RAN2 updated the UL positioning procedures in stage 2, so they think we could do it again in Rel-17.

Xiaomi think if we only specify that P and SP SRS can be supported, it is not clear how to activate and deactivate the SRS, and they think there is also an issue in Rel-16 that creates a mismatch between the releases. Huawei agree with Xiaomi.

Intel think what we did in Rel-16 was not a good practice. On Xiaomi’s comment, they think there is not consensus to capture more details in the stage 2.

Huawei think the issue is that in Rel-17, we don’t support MT-SDT, and the previous agreement says that the MAC CE can be sent with an SDT procedure.

Nokia think we should not follow a bad past precedent.

Agreements:

Proposal 6: The CR R2-2208419 for TS36.305 is agreed.

Proposal 2: R2-2207110 is not pursued. Company should submit RAN3 NRPPa related changes to RAN3 directly.

Proposal 4 (modified): Update the first change of R2-2208521 to “Periodic and Semi-persistent UL-SRS transmission for positioning can be supported in RRC\_INACTIVE” , and merge it into the stage 2 rapporteur CR.

* [Post119-e][409][POS] Positioning 38.305 CR (Intel)

Scope: Check and finalise the CR in R2-2208801.

Intended outcome: Agreed CR

Deadline: Short (for RP)

[R2-2208801](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208801%20%20Mscellaneous%20corrections%20for%20TS38.305%20v02.docx) Mscellaneous corrections for TS38.305 Intel Corporation CR Rel-17 38.305 17.1.0 0105 1 F NR\_pos\_enh-Core

[R2-2207385](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207385-Corrections%20on%20LPP%20capablities.docx) Corrections on LPP capabilies Intel Corporation CR Rel-17 37.355 17.1.0 0359 - F NR\_pos\_enh-Core

* [AT119-e][409][POS] Rel-17 positioning capabilities (Intel)

Scope: Check and update the rapporteur CR in R2-2207385 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2208492

Intended outcome: Agreeable CR in R2-2208802 and report in R2-2208817

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208817](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208817%20_Report%20of%20AT119-409-v13%20Summary1.docx) Report of [AT119-e][409][POS] Rel-17 positioning capabilities (Intel) Intel Corporation discussion Rel-17 NR\_pos\_enh-Core

For agreement:

Proposal 1: With the changes “remove -r16/-r17 suffix, and make field name italic”, the changes in R2-2207385 is agreeable, and to be merged into R2-2208802.

Proposal 2: Send a quick LS to RAN4, check them whether 14-3 PRS measurement without MG should be reported to the LMF.

Online discussion:

Proposal 3: For the P3 from R2-2208792, agree the compromised solution, i.e. clarify in the field description, and merge it into R2-2208802.

supportedDL-PRS-ProcessingSamples-RRC-Inactive

Indicates the UE capability for support of measurements based on measuring M=1 or M=2 samples (instances) of a DL-PRS Resource Set in RRC\_INACTIVE state. The UE indicates value “m1” or “m2” shall supports measurements based on both measuring M=1 or M=2 samples (instances) of a DL-PRS Resource Set in RRC\_INACTIVE state.

Discussion:

CATT think we need to decide NBC or BC for P3.

Qualcomm think P3 is OK for now, but RAN1/4 have indicated that this is a per-band capability and we have to dummify it anyway.

* [Post119-e][410][POS] LS to RAN4 on capability for PRS measurement without MG (Intel)

Scope: Draft an LS to RAN4, check whether 14-3: PRS measurement without MG should be reported to the LMF.

Intended outcome: Approved LS

Deadline: Short (not for RP)

[R2-2208802](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208802%20-Corrections%20on%20LPP%20capablities%20v01.docx) Corrections on LPP capabilies Intel Corporation CR Rel-17 37.355 17.1.0 0359 1 F NR\_pos\_enh-Core

* [Post119-e][414][POS] LPP capability CR (Intel)

Scope: Check and finalise the CR in R2-2208802

Intended outcome: Agreed CR

Deadline: Short (for RP)

[R2-2207880](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207880%20Editor's%20Correction%20for%20MAC%20spec%20for%20Positioning.docx) Editor's Correction for MAC spec for Positioning Huawei, HiSilicon CR Rel-17 38.321 17.1.0 1344 - F NR\_pos\_enh-Core

* [AT119-e][410][POS] Rel-17 positioning MAC (Huawei)

Scope: Check and update the rapporteur CR in R2-2207880 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2207886
* R2-2208125
* R2-2208204
* R2-2208300
* R2-2208512
* R2-2208686
* R2-2207883
* R2-2207012

Intended outcome: Agreeable CR in R2-2208818 and report in R2-2208819

Deadline: Tuesday 2022-08-23 1200 UTC – extended to Thursday 2022-08-25 2000 UTC

[R2-2208819](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208819%20%5b410%5d%5bPOS%5d%20Rel-17%20positioning%20MAC%20(Huawei)_v10_final.docx) [Offline-410][POS] Rel-17 positioning MAC (Huawei) Huawei, HiSilicon discussion Rel-17 NR\_pos\_enh-Core

R2-2209114 Summary of [AT119-e][410][POS] Rel-17 positioning MAC (Huawei)\_round2 Huawei, HiSilicon discussion Rel-17 NR\_pos\_enh-Core

[From round 1:]

Editorials

Proposal1: Adopt the following editorial change in the Rapp CR. (10/10)

 Change1: Change the reference of SRS transmission in RRC\_INACTIVE from 5.25 to 5.26.

 Change2: Add description for UL transmission when inactivePosSRS-TimeAlignmentTimer is not running

Proposal2: Agree with the following editorial changes in R2-2208204: (10/10)

 In the description of Positioning Measurement Gap Activation/Deactivation Request MAC CE (clause 6.1.3.40) and Positioning Measurement Gap Activation/Deactivation Command MAC CE (6.1.3.41) the definition of the “R” bit has been added.

 Fix the editorial issues in clause 5.18.20, 6.1.3.40, 6.1.3.41

Proposal3: Add description for PPW id according to R2-2208686. (10/10)

Potentially easy to agree

Proposal5: inactiveposSRS-TAT should be restarted when contentions resolution is successful for 4-step RACH and 2-step RACH. (10/10)

Proposal6: RSRP value of the pathloss reference should be updated when TAC is received for successful 2-step RACH and 4-step RACH. (10/10)

Proposal7: The condition” inactivePosSRS-TimeAlignmentTimer is running” should be added for the condition for TA validation for SRS transmission in RRC\_INACTIVE. (10/10)

Proposal8: R2 confirms that the current MAC spec has already captured when a new request has received or the current request needs to be modified, the UE cancel the currently triggered posMG activation/deactivation request. No additional change is needed. (9/10)

Proposal12: No need to add condition to clarify operation after receiving an indication from upper layer that the triggered Positioning Measurement Gap Activation/Deactivation Request MAC CE should be cancelled. (8/10)

Proposal13: SR triggered for posMG activation/deactivation request should be cancelled when the MAC CE is cancelled. (10/10)

Proposal14: RACH triggered for SR for posMG activation/deactivation request can be terminated when the Positioning Measurement Gap Activation/Deactivation MAC CE is cancelled. (10/10)

Proposal10: No need to cancel the triggered MG activation request when there is another MG configured that can satisfy the current requirement for positioning measurement in the RRC layer. (2/7)

Agreements:

Proposal1: Adopt the following editorial change in the Rapp CR. (10/10)

 Change1: Change the reference of SRS transmission in RRC\_INACTIVE from 5.25 to 5.26.

 Change2: Add description for UL transmission when inactivePosSRS-TimeAlignmentTimer is not running

Proposal2: Agree with the following editorial changes in R2-2208204: (10/10)

 In the description of Positioning Measurement Gap Activation/Deactivation Request MAC CE (clause 6.1.3.40) and Positioning Measurement Gap Activation/Deactivation Command MAC CE (6.1.3.41) the definition of the “R” bit has been added.

 Fix the editorial issues in clause 5.18.20, 6.1.3.40, 6.1.3.41

Proposal3: Add description for PPW id according to R2-2208686. (10/10)

Proposal5: inactiveposSRS-TAT should be restarted when contentions resolution is successful for 4-step RACH and 2-step RACH. (10/10)

Proposal6: RSRP value of the pathloss reference should be updated when TAC is received for successful 2-step RACH and 4-step RACH. (10/10)

Proposal7: The condition” inactivePosSRS-TimeAlignmentTimer is running” should be added for the condition for TA validation for SRS transmission in RRC\_INACTIVE. (10/10)

Proposal8: R2 confirms that the current MAC spec has already captured when a new request has received or the current request needs to be modified, the UE cancel the currently triggered posMG activation/deactivation request. No additional change is needed. (9/10)

Proposal12: No need to add condition to clarify operation after receiving an indication from upper layer that the triggered Positioning Measurement Gap Activation/Deactivation Request MAC CE should be cancelled. (8/10)

Proposal13: SR triggered for posMG activation/deactivation request should be cancelled when the MAC CE is cancelled. (10/10)

Proposal14: RACH triggered for SR for posMG activation/deactivation request can be terminated when the Positioning Measurement Gap Activation/Deactivation MAC CE is cancelled. (10/10)

Proposal10: No need to cancel the triggered MG activation request when there is another MG configured that can satisfy the current requirement for positioning measurement in the RRC layer. (2/7)

[From round 2:]

Proposal4: Regarding the state of activation/deactivation for PPW:

 (a)Capture in the spec that upon activation of DL BWP, the PPW(s) configured for that BWP are considered deactivated. (6/8)

 [UPDATED](b)Upon reconfiguration of PPW(s) of the active DL BWP, all the PPW(s) for that BWP are considered deactivated. FFS whether the RRC reconfiguration can indicate the activation/deactivation state of the PPW upon reconfiguration.

[UPDATED] Proposal9: the triggered activation request should be cancelled by RRC when the gap is not yet activated but not needed any more. (4/7)

[UPDATED]Proposal11: Cancel the triggered posMG activation/deactivation request when it is already activated/deactivated. (5/8)

[R2-2208818](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208818%20Editor's%20Correction%20for%20MAC%20spec%20for%20Positioning.docx) Editor's Correction for MAC spec for Positioning Huawei, HiSilicon CR Rel-17 38.321 17.1.0 1344 1 F NR\_pos\_enh-Core

* [Post119-e][411][POS] Positioning 38.321 CR (Huawei)

Scope: Check and finalise the CR in R2-2208818.

Intended outcome: Agreed CR

Deadline: Short (for RP)

[R2-2208076](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208076%20RRCCR.docx) Miscellaneous correction for Positioning Ericsson, Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3353 - F NR\_pos\_enh-Core

[R2-2208710](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208710%20Summary%20for%20Positioning%20RRC.docx) RRC Corrections for Positioning Ericsson discussion Rel-17 NR\_pos\_enh-Core Late

* [AT119-e][411][POS] Rel-17 positioning RRC (Ericsson)

Scope: Check and update the rapporteur CR in R2-2208076 to take account of decisions of this meeting. Evaluate the proposals in the following tdocs:

* R2-2207411
* R2-2207881

Summary discussion document in R2-2208710 can be taken into account.

Intended outcome: Agreeable CR in R2-2208825

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208825](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208825%20RRCPositioning.docx) Miscellaneous correction for Positioning Ericsson, Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3353 1 F NR\_pos\_enh-Core

* [Post119-e][412][POS] Positioning 38.331 CR (Ericsson)

Scope: Check and finalise the CR in R2-2208825.

Intended outcome: Agreed CR

Deadline: Short (for RP)

### 6.11.2 Essential corrections

No documents should be submitted to 6.11.2. Please submit to 6.11.2.x.

FR2-2 support (discuss online)

[R2-2208298](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208298%20Positioning%20of%20UEs%20with%20use%20of%20higher%20SCS%20in%20FR2-2.docx) Discussion on positioning of UEs in FR2-2 Samsung discussion Rel-17 NR\_pos\_enh-Core

Proposal 1: In R17, RAN2 does not support the use of SRS/PRS with 480/960 kHz SCS in FR2-2 for positioning. If it is agreed, RAN2 can discuss the draft CR R2-2208299 to make this aspect clear in TS 38.331.

Discussion:

vivo think RAN1 never evaluated the performance of these combinations, and wonder if it should be discussed in RAN1 first.

CATT think RAN2 cannot make this decision and would prefer to have RAN1/RAN4 look at it; they would like to send an LS to those groups. They understand that RAN1/RAN4 have no plans to support this combination in Rel-17. Intel agree with CATT.

Huawei agree with vivo and CATT.

Samsung are fine with sending an LS to check.

Nokia are OK with sending the LS, but think that the RAN2 agreement quoted in Samsung’s paper suggests that if we do not support it, we might need to indicate something explicitly.

Ericsson think there would be cleaner solutions with a capability.

* [AT119-e][420][POS] LS to RAN1/RAN4 on positioning in FR2-2 (Samsung)

Scope: Draft an LS to RAN1 and RAN4 inquiring about the possibility of supporting SRSp/PRS with 480/960 kHz SCS in FR2-2.

Intended outcome: Approved LS (without CB if possible) in R2-2208810

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208810](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208810%20LS%20on%20support%20of%20positioning%20in%20FR2-2.docx) LS on support of positioning in FR2-2 RAN2 LS out Rel-17 NR\_pos\_enh-Core, NR\_ext\_to\_71GHz To:RAN1, RAN4

* Approved (email discussion [AT119-e][420])

[R2-2208299](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208299%20draftCR_positioning%20with%20higher%20SCS%20in%20FR2-2.docx) Clarification on the use of SRS with 480 kHz, 960 kHz SCS in FR2-2 for positioning Samsung draftCR Rel-17 38.331 17.1.0 NR\_pos\_enh-Core, NR\_ext\_to\_71GHz

#### 6.11.2.1 Latency enhancements

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

AI summary

[R2-2208792](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208792_(Summary%20AI%206.11.2.1)_v02.docx) Summary of AI 6.11.2.1: Essential Corrections for Latency enhancements Qualcomm Incorporated discussion Rel-17 NR\_pos\_enh-Core

[Chair’s note: Revision marks in the original proposals have been edited for clarity.]

Proposal 1: RAN2 to discuss and decide whether the LPP CR in R2-2207101, "Corrections on the latency enhancements in TS 37.355", is an essential correction or not.

Discussion:

Ericsson support the intention to change from “area” to “cell”.

ZTE tend to agree with the moderator’s summary that the capability describes the maximum number of areas (not cells), and the area size in cells does not have a capability. So they think the first change is not essential.

vivo think on the first change, the current description is OK. For the second change, they think having one UTC time in the common IE is enough.

CATT think the description of the capability is not clear as to the meaning of “area”.

Xiaomi think for the first change, if the UE capability indicates the number of areas that can be supported, it is not clear what the limit is on the number of TRPs in a single message; can it exceed 256?

Huawei have the same view as Qualcomm’s comment in the document, that the first change is not so essential; the second change they think is not specific to Rel-17, and the current time structure has been there since Rel-13.

Intel agree with Qualcomm’s view. Regarding Xiaomi’s comment, they understand that the TRP limitation is 256 per instance, and if the UE can support two instances it would need to support up to 512 TRPs.

Apple also agree with Qualcomm’s view about the first change; they have some sympathy for the second one but think it is not really a correction. Samsung and Nokia also agree with Qualcomm.

Proposal 2: The LPP CR in R2-2207579, "Correction on the request message of reduced PRS samples in 37.355", is an essential correction. RAN2 to discuss and decide:

(a) whether to correct the ASN.1 requestedDL-PRS-ProcessingSamples-r17 backwards compatible:

requestedDL-PRS-ProcessingSamples-r17 ENUMERATED { requested, ... }

or non-backwards compatible (as proposed in R2-2207579):

requestedDL-PRS-ProcessingSamples-r17 ENUMERATED { requested}

(b) discuss whether RAN1 and RAN4 should be consulted on the capability confusion (i.e., "per band" (RAN1), "per UE" (RAN4)).

Discussion:

Intel agree with the issue and the proposed solution, but they think we should avoid NBC changes; they also agree to consult RAN1/RAN4.

ZTE think the NBC issues should be discussed case by case, and this is a functional problem if the CR is not adopted, so they prefer the NBC change; they think it is necessary to consult RAN1/RAN4.

Nokia agree it is essential and are fine with sending the LS; they think we can take NBC changes if the BC option is cumbersome, but in this case the BC option seems acceptable.

Apple also think the BC option is preferable.

Agreement:

Correct the ASN.1 requestedDL-PRS-ProcessingSamples-r17 in a backward compatible manner:

requestedDL-PRS-ProcessingSamples-r17 ENUMERATED { requested, ... }

LS to RAN1/RAN4 to ask about the capability confusion on this point between per-band and per-UE.

Proposal 3: The LPP CR R2-2207885, "Correction to the number of samples for PRS measurement in RRC\_INACTIVE", is an essential correction. RAN2 to discuss and decide:

(a) whether to dummify the existing field of supportedDL-PRS-ProcessingSamples-RRC-Inactive-r17, and add a new field for the reducedDL-PRS-ProcessingSamples-RRC-Inactive-r17 as proposed in R2-2207885.

(b) extend the ENUMERATED and dummify the existing values 'm1' and 'm2':

ENUMERATED { dummy1, dummy2, ..., supported-v17xy }

(c) make a non-backwards compatible ASN change as proposed in R2-2207580 [7]:

ENUMERATED { supported }

Discussion:

Huawei proposed option a, but think option b would also be OK; they cannot accept option c.

Samsung also support the proposal and prefer option a; they see not much difference between a and b in overhead, and find a more readable.

CATT and ZTE prefer the NBC change in c.

Apple think either a or b is fine.

Intel and OPPO prefer option b.

Qualcomm think we could avoid any ASN.1 change and just clarify the field description. They agree that the NBC solution in c is not desired.

Agreement:

The capability for supportedDL-PRS-ProcessingSamples-RRC-Inactive-r17 is modified to indicate only support in a backward compatible fashion. Details can be discussed in the LPP capability email discussion [409].

Proposal 4: The field name lowerRxBeamSweepingThan8-FR2-r17 in IE PRS-ProcessingCapabilityPerBand-r16 should be changed to supportedLowerRxBeamSweepingThan8-FR2-r17.

Agreement:

The field name lowerRxBeamSweepingThan8-FR2-r17 in IE PRS-ProcessingCapabilityPerBand-r16 should be changed to supportedLowerRxBeamSweepingThan8-FR2-r17.

Proposal 5: RAN2 to discuss and decide whether the Proposals in R2-2207693, "Positioning during handover and re-establishment", are essential corrections or not.

Discussion:

Qualcomm think the signalling does not prohibit anything during handover and re-establishment; the only question is whether there are performance requirements, and they understand that there are for HO and other cases are implementation. They see no spec impact to specify this.

ZTE, Intel, Samsung agree with Qualcomm.

Ericsson also think it is not essential and agree with Qualcomm that the RAN4 specs already capture the requirements.

Nokia also think it is not essential, but think that RAN2 have not formally introduced mobility support for positioning sessions.

Huawei and CATT also agree with Qualcomm. Apple think it is in RAN4 scope.

Lenovo can follow the majority view, but they indicate that there is no mention of the re-establishment case in the RAN4 spec.

Proposal 6: Regarding the SR configuration for Measurement Gap Activation/Deactivation Request MAC CE, RAN2 to discuss and decide whether

(a) link the SR configuration for the Measurement Gap Activation/Deactivation Request MAC CE to a common SR configuration.

(b) introduce a dedicated SR configuration for the Measurement Gap Activation/Deactivation Request MAC CE.

Discussion:

Huawei think something is needed, because there is no linked SR configuration today. When the SCell BFR MAC CE was introduced, they recall that the SR configuration was discussed in RAN1, and they think we could leave it to RAN1 to discuss whether a dedicated configuration is needed here. Intel and Lenovo agree with Huawei.

Samsung wonder what “common SR configuration” means here, and how the MAC CE can be associated with it. Huawei indicate that it means that the configuration is configured in the SchedulingRequestConfiguration and can be used for any SR, whereas a dedicated configuration can only be used for this MAC CE. From an ASN.1 pov, Huawei think the difference is just the field description.

Ericsson see an advantage to having a dedicated configuration in case the gNB does not expect the UE to send this SR.

OPPO prefer option b and think this may be an urgent MAC CE to be sent.

Qualcomm agree with OPPO; the MAC CE is urgent, and they think this is also the cleanest approach from a spec perspective. They are not sure that a field description change would be enough for option a. Ericsson agree with Qualcomm.

Huawei can accept option b, and they agree with Qualcomm that an ASN.1 change is needed; but they think the difference between common and dedicated is just the field description.

Huawei think we should notify RAN1.

Agreement:

Introduce a dedicated SR configuration for the Measurement Gap Activation/Deactivation Request MAC CE.

LS to RAN1 notifying them of the RAN2 decision.

Change to be taken into account in the RRC CR email discussion [411].

* [AT119-e][422][POS] LS to RAN1/RAN4 on DL-PRS sample capability (ZTE)

Scope: Draft an LS to RAN1/RAN4 indicating that we find a disconnect between the capabilities for reduced DL-PRS processing samples in different states, and requesting clarification.

Intended outcome: Approved LS (to be sent urgently) in R2-2208797

Deadline: Friday 2022-08-19 1200 UTC

[R2-2208797](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208797%20LS%20on%20DL-PRS%20measurements%20with%20reduced%20samples%20capability.docx) LS on DL-PRS measurements with reduced samples capability RAN2 LS out Rel-17 NR\_pos\_enh-Core To:RAN1, RAN4

* Approved (email discussion [AT119-e][422])
* [AT119-e][423][POS] SR configuration for Measurement Gap Activation/Deactivation Request MAC CE (Huawei)

Scope: Draft an LS to RAN1 notifying them of the RAN2 decision on a dedicated SR configuration for the Measurement Gap Activation/Deactivation Request MAC CE.

Intended outcome: Approved LS in R2-2208811

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208811](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208811%20LS%20on%20SR%20config%20for%20MG%20(de-)Activation.docx) LS on SR config for MG (de-)activation request MAC CE RAN2 LS out Rel-17 NR\_pos\_enh-Core To:RAN1

* Approved (email discussion [AT119-e][423])
* [AT119-e][424][POS] Rel-17 LPP CR (Qualcomm)

Scope: Draft a CR to 37.355 taking account of this meeting’s decisions.

Intended outcome: Agreeable CR in R2-2208800, report in R2-2208803

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208803](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\Draft_R2-2208803_(%5bAT119-e%5d%5b424%5d%5bPOS%5d%20Rel-17%20LPP)_v11_Summary.docx) Summary of [AT119-e][424][POS] Rel-17 LPP CR (Qualcomm) Qualcomm Incorporated discussion Rel-17

[R2-2208800](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208800_(CR%2037355)_v03.docx) Miscellaneous LPP Corrections Qualcomm Incorporated CR Rel-17 37.355 17.1.0 0378 - F NR\_pos\_enh-Core

* [Post119-e][413][POS] 37.355 CR (Qualcomm)

Scope: Check and finalise the CR in R2-2208800.

Intended outcome: Agreed CR

Deadline: Short (for RP)

Covered in summary

[R2-2207101](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\37355_CR0353_(Rel-17)_R2-2207101.docx) Corrections on the latency enhancements in TS 37.355 CATT CR Rel-17 37.355 17.1.0 0353 - F NR\_pos\_enh-Core

[R2-2207579](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207579%20Correction%20on%20the%20request%20message%20of%20reduced%20PRS%20samples%20in%2037.355.docx) Correction on the request message of reduced PRS samples in 37.355 ZTE, Sanechips CR Rel-17 37.355 17.1.0 0362 - F NR\_pos\_enh-Core

[R2-2207580](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207580%20Correction%20on%20UE%20capability%20of%20reduced%20PRS%20samples%20in%20RRC_INACTIVE%20in%2037.355.docx) Correction on UE capability of reduced PRS samples in RRC\_INACTIVE in 37.355 ZTE, Sanechips CR Rel-17 37.355 17.1.0 0363 - F NR\_pos\_enh-Core

[R2-2207885](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207885%20Correction%20to%20the%20number%20of%20samples%20for%20PRS%20measurement%20in%20RRC_INACTIVE.docx) Correction to the number of samples for PRS measurement in RRC\_INACTIVE Huawei, HiSilicon CR Rel-17 37.355 17.1.0 0371 - F NR\_pos\_enh-Core

[R2-2208077](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208077%20LPPCR.docx) Correction of the IE for lower Rx beam sweeping factor than 8 for FR2 capability and request Ericsson CR Rel-17 37.355 17.1.0 0374 - F NR\_pos\_enh-Core

[R2-2207693](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207693%20Positioning%20during%20handover%20and%20re-establishment%20v2.0.docx) Positioning during handover and re-establishment Lenovo discussion Rel-17

[R2-2208124](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208124_(CR%2038.331%20Scheduling%20ID%20posMG).docx) Correction to missing Scheduling Request Configuration for Positioning Measurement Gap Activation/Deactivation Request MAC CE Qualcomm Incorporated CR Rel-17 38.331 17.1.0 3358 - F NR\_pos\_enh-Core

Stage 2 (to be considered in email discussion [408])

[R2-2207110](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38305_CR0103_(Rel-17)_R2-2207110.docx) Corrections on TS38.305 CATT CR Rel-17 38.305 17.1.0 0103 - F NR\_pos\_enh-Core

[R2-2208491](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208491%20Change%20request%20about%20validity%20area%20in%2038.305.docx) Change request about validity area in 38.305 vivo draftCR Rel-17 38.305 17.1.0 D NR\_pos\_enh-Core

LPP capability (to be considered in email discussion [409])

[R2-2208492](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208492%20Change%20request%20about%20UE%20capability%20for%20PRS%20measurement%20within%20a%20PPW.docx) Change request about UE capability for PRS measurement within a PPW vivo draftCR Rel-17 37.355 17.1.0 F NR\_pos\_enh-Core

MAC (to be considered in email discussion [410])

[R2-2207886](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207886%20Cancellation%20of%20SR%20for%20posMG%20(de-)activation%20request.docx) Cancellation of SR for posMG (de-)activation request Huawei, HiSilicon discussion Rel-17 NR\_pos\_enh-Core

[R2-2208125](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208125_(CR%2038.321%20SR%20posMG).docx) Correction to Scheduling Request for Positioning Measurement Gap Activation/Deactivation Request Qualcomm Incorporated CR Rel-17 38.321 17.1.0 1371 - F NR\_pos\_enh-Core

[R2-2208204](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\38321_CRxxxx_(Rel-17)_R2-2208204%20Misc%20corrections%20to%20ePos.docx) Miscellaneous corrections to NR positioning enhancements Lenovo draftCR Rel-17 38.321 17.1.0 F NR\_pos\_enh-Core

[R2-2208300](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208300%20draftCR_cancellation%20of%20UL%20MAC%20CE%20for%20pre-MG.docx) Cancellation of UL MAC CE for MG activation/deactivation Samsung draftCR Rel-17 38.331 17.1.0 NR\_pos\_enh-Core

[R2-2208512](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208512.docx) Corrections for triggered Positioning MG Req MAC CE Samsung draftCR Rel-17 38.321 17.1.0 F NR\_pos\_enh-Core

[R2-2208686](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208686%20Correction%20on%20PPW%20for%20positioning%20enhancement.docx) Correction on PPW for positioning enhancement NEC draftCR Rel-17 38.321 17.1.0 F NR\_pos\_enh-Core

RRC (to be considered in email discussion [411])

[R2-2207411](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207411%20Change%20request%20about%20PPW%20configuration.docx) Change request about PPW configuration vivo, Ericsson CR Rel-17 38.331 17.1.0 3260 - F NR\_pos\_enh-Core

#### 6.11.2.2 RRC\_INACTIVE

Methods, measurements, signalling and procedures to support positioning for UEs in RRC\_ INACTIVE state, for UE-based and UE-assisted positioning solutions. UL and DL+UL NR positioning methods and gNB positioning measurements for UEs in RRC\_INACTIVE are treated at lower priority.

SRS configuration (discuss online)

[R2-2207112](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207112%20Discussion%20on%20left%20over%20issues%20of%20inactive%20positioning.docx) Discussion on left over issues of UL positioning in RRC\_Inactive CATT discussion Rel-17 NR\_pos\_enh-Core

Proposal 1: When judging TA validation, the condition of “inactivePosSRS-TimeAlignmentTimer is running” should be added and the modification in Annex A should be adopted.

Proposal 2: In case of UE reselect to the previous cell again, to solve the misalignment of srs-PosRRC-Inactive configuration between UE and the network, RAN2 to decide which solution is adopted:

Option 1: Not use delta configuration for srs-PosRRC-Inactive. TP in Annex B is adopted accordingly;

Option 2: Whether the srs-PosRRC-Inactive to be released is judged in procedure of resume instead of cell reselection. TP in Annex C is adopted accordingly.

Discussion:

Ericsson think we discussed this issue previously and the current spec is good enough.

Huawei have the same view as Ericsson; they think the delta configuration is valid. Huawei think the failure mode can be solved by having the UE release the configuration when it reselects. They also think this is a corner case.

ZTE think the problem situation is not possible, because only when the UE resumes will it release the actual configuration. They understand this is the solution in SDT as well.

vivo think this is a different situation from SDT, because the UE will release the configuration at reselection, so they think the issue is valid; however, they do not prefer the proposed solution options, because they think the delta configuration is important but option 2 could cause interference. So they think we could introduce a new cause value.

CATT think this is a bit of a corner case, but when it occurs, the configuration will be out of alignment between UE and NW if the TA timer has not expired.

* [AT119-e][421][POS] Delta configuration for SRSp in RRC\_INACTIVE (CATT)

Scope: Discuss the situation described in R2-2207112 and determine if RAN2 should take action; if the issue is deemed valid, attempt to agree on at least the direction of a solution.

Intended outcome: Report to CB session in R2-2208806

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208806](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208806%20%5bAT119-e%5d%5b421%5d%5bPOS%5d%20Delta%20configuration%20for%20SRSp%20in%20RRC_INACTIVE%20(CATT)_v14_Summary.docx) [AT119-e][421][POS] Delta configuration for SRSp in RRC\_INACTIVE (CATT) CATT discussion Rel-17 NR\_pos\_enh-Core

Proposal 1: The issue “In case of UE reselect to another cell and then reselect back within the inactivePosSRS-TimeAlignmentTimer, there will be misalignment on SRS configuration between UE and gNB” is deemed valid. (9/11)

Proposal 2: The mechanism of delta configuration for SRSp in RRC\_INACTIVE is kept. (9/11)

Discussion:

Xiaomi acknowledge that the scenario is valid, but they think it is a corner case and they do not want to burden the UE for it. They think other solutions are possible, e.g., as suggested in P5.

CATT indicate that P2 is just to keep the existing ASN.1, so there is no update proposed.

Huawei think the issue is if the SRS configuration is released when cell reselection happens, and this is not clear from P1.

Agreement:

Proposal 2: The mechanism of delta configuration for SRSp in RRC\_INACTIVE is kept in ASN.1. (9/11)

Proposal 3: Considering the issue in P1 (when UE reselect back to the cell where SRS was configured, there is misalignment on SRS configuration between UE and gNB), SRS is judged to be released or not in procedure of resume instead of cell reselection. (7/11)

Discussion:

CATT indicate that there was majority support for having the release behaviour specified for the resume procedure.

Huawei think we have agreed in the previous meeting that the UE releases the SRS configuration at resume, and the question here is just whether it should be released at cell reselection. They have the concern that the configuration may be released twice if so. They understand that the intention is not to address the “back and forth” scenario, which they consider a corner case.

vivo think we should not make this change, but they disagree with Huawei’s interpretation of the current conditions and think there will be no double release. They think it is a corner case, and would prefer to resolve it with full configuration or a NOTE.

Intel agree with vivo about the background that the release procedure was removed from resume. ZTE have the same understanding. Regarding the issue, Intel prefer that the UE only removes the configuration upon resume.

Xiaomi agree with vivo and Intel. Regarding the back-and-forth case, they also think a NOTE could resolve it.

Ericsson agree with the background provided by Intel and vivo. They understand that we chose to put this behaviour in cell reselection and believed that everything works fine. They think the corner case will not be resolved even if it is put in resume.

Intel indicate that if the network maintains the configuration and the UE does not, the UE will not understand the delta configuration and may trigger re-establishment.

Huawei agree we removed the release behaviour at resume request, so they think the current spec is OK from the double release perspective.

OPPO agree with Xiaomi and vivo and think a NOTE to require the full configuration would solve the problem.

CATT wonder if the NOTE makes sense in the RRC.

Intel point out that we do not normally specify network behaviour, but they think we could have a NOTE as long as it is not a “shall”. Ericsson have the same understanding.

CATT wonder how the network knows when it needs to do this. Intel indicate that if the network does not behave like this, the UE will re-establish.

Huawei understand that if we put “may” in the note, the network can still use the delta configuration.

Ericsson think there are cases where the network could anticipate no reselection, e.g., one large cell in IIoT, so they do not see the need to restrict.

OPPO agree with Ericsson that there are cases where the network can make a reasonable inference, so they would also prefer to leave this open for network implementation.

Nokia are OK with the NOTE, but think we could consider coming back next meeting.

Agreements:

Add a NOTE to the RRC indicating that the network should provide the full configuration for SRSp in RRC\_INACTIVE, i.e., the delta configuration is not used.

Details of the note wording can be discussed in the RRC CR implementation.

Proposal 4: If Proposal 3 is agreed, RAN2 to further discuss whether the behaviour of stop inactivePosSRS-TimeAlignmentTimer upon cell reselection should also be deleted, to keep the alignment of valid understanding between UE and the network.

Proposal 5: If delta configuration is kept (Proposal 2 is agreed) and UE release the SRS upon cell re-selection (Proposal 3 is not agreed), RAN2 to further discuss the following two candidate solutions:

- UE indicate to gNB whether UE has already released the SRS configuration in resume procedure. (3/11)

- Add a note in RRC specification to illustrate that NW always configure full configuration. (2/11)

LCS trigger (SA2 related; discuss online if time)

[R2-2208074](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208074%20RRCInactive%20.docx) on RRC Inactive Mode Positioning Ericsson discussion Rel-17

* Noted

Proposal 1 Send an LS to SA2 to support the update of the LCS Periodic-triggered Invoke Request.

Discussion:

Nokia think this can be raised in SA2. vivo, Intel, and Apple agree. Also ZTE.

OPPO think it is an optimisation, and also think it is in SA2 scope.

CATT think it is a new requirement and should be discussed in SA2.

Huawei think the event actually comes from the LCS client, and they do not see the need to reconfigure it. They also agree that it needs to be discussed in SA2.

Draft reply to LS in SDT session (to be handled in SDT session, email discussion [311])

[R2-2208072](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208072%20OnContainer.docx) On transferring SDT configuration and SRS positioning Inactive configuration from DU to CU Ericsson discussion Rel-17

RRC (to be considered in email discussion [411])

[R2-2207881](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207881%20Correction%20for%20inactivePosSRS-TAT%20upon%20transitioning%20to%20RRC_CONNECTED.docx) Correction for inactivePosSRS-TAT upon transitioning to RRC\_CONNECTED Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3322 - F NR\_pos\_enh-Core

MAC (to be considered in email discussion [410])

[R2-2207883](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207883%20Correction%20to%20TA-validation%20for%20inactive%20SRS%20transmission.docx) Correction to TA-validation for inactive SRS transmission Huawei, HiSilicon CR Rel-17 38.321 17.1.0 1345 - F NR\_pos\_enh-Core

Stage 2 (to be considered in email discussion [408])

[R2-2208521](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208521%20Corrections%20on%20activation%20and%20deactivation%20of%20SP-SRSp%20transmission%20in%20RRC%20INACTIVE.doc) Corrections on activation and deactivation of SP-SRSp transmission in RRC INACTIVE Xiaomi, Huawei, vivo CR Rel-17 38.305 17.1.0 0107 - F NR\_pos\_enh-Core

#### 6.11.2.3 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.

OD-PRS configuration (discuss online)

[R2-2208493](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208493%20Discussion%20on%20the%20format%20of%20on-demand%20PRS%20configuration.docx) Discussion on the format of on-demand PRS configuration vivo, ZTE, Ericsson, Huawei, Xiaomi discussion Rel-17 NR\_pos\_enh-Core

Proposal1: Align with RAN1 on the parameters of the pre-defined on-demand PRS configuration in LPP.

Proposal 2: Discuss how to address the on-demand PRS configuration issue in LPP, the potential options include:

- Option 1: Reuse the nr-On-Demand-DL-PRS-Information IE to describe the pre-defined on-demand PRS configuration, turn the nr-DL-PRS-PositioningFrequencyLayer-r17 and nr-DL-PRS-Info-r17 into dummy IEs.

- Option 2: Reuse the nr-On-Demand-DL-PRS-Information IE to describe the pre-defined on-demand PRS configuration, remove the nr-DL-PRS-PositioningFrequencyLayer-r17 and nr-DL-PRS-Info-r17. (NBC change)

- Option 3: Add clarification in the field description of On-Demand-DL-PRS-Configuration, e.g., LMF may fill arbitrary values for these parameters not agreed by RAN1 and the UE shall ignore them.

Discussion:

vivo clarify that dummifying the fields as in option 1 would be an overhead concern.

CATT think there is not an issue, because RAN1 left it to RAN2 to define this configuration, and RAN1 only defined what the UE can request.

Intel have the same view as CATT regarding the RAN1/RAN2 work split. Based on the argument in the paper, they understand that the concern is whether the LMF can set the parameters properly; however, Intel do not see the problem for the LMF to do this.

Samsung agree with the motivation of the change and prefer option 3, since the existing fields of concern are mandatory, meaning that even if we dummified them, the LMF would have to put something.

Qualcomm have a similar view to Intel and CATT; they understand that RAN1 only studied the explicit parameter option, which is handled correctly in RAN2/RAN3 specs, but the predefined configurations are only in RAN2 scope. They understand that the predefined configuration should include the whole configuration; however, they also agree that there are parameters in the configuration that do not make sense, but they see a problem only with parameters that are OPTIONAL. They do not think we should align to the RAN1 parameters, since those include e.g. QCL information; they suggest we define a new IE containing the parameters comprising the on-demand configuration, but this would be an NBC change with a lot of impact. So they could accept option 3, but they think some work still needs to be done to determine which parameters really are not applicable.

OPPO prefer option 3 and agree with the motivation. They understand that the on-demand configuration was already discussed by RAN3 and is aligned with RAN1, so the LMF should only provide the parameters as agreed by RAN1. They think dummifying the fields would be a little bit strange.

Ericsson think there are parameters like sequence ID and power that are mandatory, but that the LMF cannot meaningfully fill. They find option 3 a bit messy and still prefer option 2.

Huawei think we do not need to specify network behaviour and can just say the UE ignores these fields. Ericsson agree with Huawei.

Nokia think we should clearly document what the parameters are; is it just the ones highlighted in red in the paper? vivo clarify that the red-highlighted parameters are the ones RAN1 did not agree. Qualcomm do not entirely agree with the list of parameters; for example, they think the cyclic prefix length is a relevant part of the configuration and the UE may request a parameter that includes a particular value of the CP length, even though it does not explicitly include this parameter in its request.

Proposal 3: Add the case of new PRS transmission in the stage2 procedures of on-demand PRS response.

Discussion:

Intel think P3 is OK.

Agreements:

Add clarification in the field description of On-Demand-DL-PRS-Configuration, e.g., UE ignores the parameters that the LMF cannot meaningfully fill (e.g. TRP dependent). Details to be checked in the LPP email discussion ([424]).

Add the case of new PRS transmission in the stage2 procedures of on-demand PRS response. To be implemented in the stage 2 email discussion [408].

[R2-2207419](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207419%20Change%20request%20about%20QCL-Info%20in%20the%20on-demand%20PRS%20request.docx) Change request about QCL-Info in the on-demand PRS request vivo CR Rel-17 37.355 17.1.0 0360 - F NR\_pos\_enh-Core

* To be merged into the LPP CR (details to be checked in email discussion [424]).

Discussion:

Qualcomm think the coversheet is not clear as to what is wrong. vivo clarify that there should be at least one instance of QCL info for each resource set, and the current code supports only one.

Nokia think the top-level list field provides a list already. Chair understood that this list provided one QCL source per resource set.

Huawei agree with the CR, but think the naming of the fields can be improved.

Agreement:

CR in R2-2207419 to be captured in the LPP email discussion [424]; details can be discussed.

MAC (to be considered in email discussion [410])

[R2-2207012](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207012_DraftCR_38321_Corrections%20for%20DL-PRS%20processing%20window%20activation.docx) Corrections for DL-PRS processing window activation Samsung Electronics Co., Ltd draftCR Rel-17 38.321 17.1.0 NR\_pos\_enh-Core

#### 6.11.2.4 GNSS positioning integrity

Signalling and procedures to support GNSS positioning integrity determination.

UE-based integrity (discuss online)

[R2-2208075](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208075%20integrity.docx) Provisioning of missing integrity requirements Ericsson discussion Rel-17

Proposal 1 Support UE-based integrity assessments and define necessary assistance data in LPP

Proposal 2 Agree to the LPP text proposal in the appendix.

Discussion:

OPPO understand that UE-based integrity is needed and we should provide a baseline in Rel-17 that can be used for the Rel-18 work.

CATT consider that the integrity assessment is not the responsibility of LPP. For example in MO-LR, the location response is reported from LMF to AMF, then to UE eventually; they think the higher layers should take care of the assessment. So they do not see the change as necessary.

ZTE wonder if this would mean the UE has to report the flag on whether PL>AL; they understand that mode 2 reporting is currently not supported in Rel-17. They also see this as an enhancement rather than a correction.

Qualcomm understand that this is the mode 1 vs. mode 2 discussion, which we already had. They do not think the UE should verify that the PL meets some service requirements, in the same way that the UE does not verify the QoS. From a feature point of view, they do not think we need the additional mode, and think including the TIR in the assistance data does not make sense; and they do not see it as a correction.

Nokia also think this is not an essential correction; it looks like additional functionality. Apple agree with Nokia.

Swift agree that this is more of a new use case than a correction, but they do think it can be a useful use case. They wonder if the UE would be required to use the new parameters.

Intel have some sympathy for the proposal and think it is not clear how the UE calculates the PL without knowing the AL.

Ericsson think it is feasible to report the additional parameters in LPP, and the application layers in the UE may need to do the integrity assessment. They see this as similar to what the network receives in MT-LR cases. They do not see this as equivalent to the mode 1/mode 2 discussion and think it is filling a gap.

OPPO agree with Ericsson and see the spec impact as limited.

CATT understand that the UE can calculate PL without AL. Samsung think the AL is needed.

* [AT119-e][425][POS] UE-based integrity assessment (Ericsson)

Scope: Evaluate the proposal in R2-2208075 from the standpoint of determining if it is an essential correction. New functionality will not be introduced and the discussion should determine if there is support for this change as a correction in Rel-17.

Intended outcome: Report to CB session in R2-2208807

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208807](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208807%20%5bAT119-e%5d%5b425%5d%5bPOS%5d%20UE-based%20integrity%20assessment%20(Ericsson)_Summary.docx) [AT119-e][425][POS] UE-based integrity assessment (Ericsson) Ericsson discussion Rel-17

* Noted

Question UEB-1: Do companies agree that if AL and TTA, together with TIR is provided as part of assistance data from the location server to enable UE-based integrity assessment, it is up to device implementation if and how the information is used for integrity assessment, if information from higher layers in the device is used etc ?

Rapporteur summary: A majority of the companies agree that AL and TTA are needed at the UE side in order to determine integer availability based at the UE. Some companies think that there is a need for further discussions regarding aspects concerning LPP signalling of AL and TTA from network to UE. Some companies think that such discussions can be part of Rel 18 integrity discussions and some that needs to be in Rel 17.

Question UEB-2: Do companies agree to the text proposal in [1] with the few changes needed to enable the support of integrity for UE-based and A-GNSS positioning which is the remaining part of the WID objective ?

Rapporteur summary: No consensus, 4 in favour and 6 against the text proposal in [1], Different opinions about whether the WID objectives have been completed or not. One comment concerns whether AL and TTA shall also be part of the posSIB scope.

LPP (to be considered by email)

[R2-2207736](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\37355_CR0365_(Rel-17)_R2-2207736.docx) Corrections on the integrity of A-GNSS in TS 37.355 CATT CR Rel-17 37.355 17.1.0 0365 - F NR\_pos\_enh-Core

* Not pursued (email discussion [AT119-e][416])

[R2-2208395](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208395.docx) Correction on the GNSS Orbit and Clock Integrity Bounds in TS 37.355 Swift Navigation, ESA, Ericsson CR Rel-17 37.355 17.1.0 0377 - F NR\_pos\_enh-Core

* Revised in R2-2208827

[R2-2208827](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208827.docx) Correction on the GNSS Orbit and Clock Integrity Bounds in TS 37.355 Swift Navigation, ESA, Ericsson CR Rel-17 37.355 17.1.0 0377 1 F NR\_pos\_enh-Core

* Agreed (email discussion [AT119-e][416])
* [AT119-e][416][POS] Rel-17 positioning integrity (Swift)

Scope: Evaluate the proposals in the following tdocs:

* R2-2207736
* R2-2208395

Intended outcome: Agreed CRs for merge into LPP rapporteur CR; report in R2-2208793

Deadline: Tuesday 2022-08-23 1200 UTC

Report of email discussion on LPP proposals

[R2-2208793](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208793%20-%20SUMMARY_Rel-17%20positioning%20integrity%20(Swift).docx) [AT119-e][416][POS] Rel-17 positioning integrity (Swift) Swift Navigation discussion Rel-17 NR\_pos\_enh-Core

Proposal 1: The proposed changes in CR R2-2207736 are not required.

Proposal 2: The changes from CR R2-2208395 are agreed and will be updated in LPP (a revised CR coversheet R2-2208827 will be submitted to remove the text “No impact to ASN.1”).

Stage 2 (to be considered in email discussion [408])

[R2-2208415](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208415.docx) Correction on the mean orbit error projection in TS 38.305 Swift Navigation, ESA, Ericsson CR Rel-17 38.305 17.1.0 0106 - F NR\_pos\_enh-Core

[R2-2208419](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208419.docx) Correction on the mean orbit error projection in TS 36.305 Swift Navigation, ESA, Ericsson CR Rel-17 36.305 17.1.0 0110 - F NR\_pos\_enh-Core

Withdrawn/Not available

R2-2207363 Corrections on the integrity of A-GNSS in TS 37.355 CATT CR Rel-18 37.355 17.1.0 0358 - F NR\_pos\_enh-Core Withdrawn

#### 6.11.2.5 A-GNSS enhancements

Including support of BDS B2a and B3I signals and support of NavIC.

#### 6.11.2.6 Accuracy enhancements

Input on the accuracy enhancement objectives led by RAN1.

AI summary

[R2-2208794](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208794%20Summary%20of%20AI%206.11.2.6%20(CATT).docx) [Pre119-e][402] Summary of agenda item 6.11.2.6 on positioning accuracy enhancements (CATT) CATT discussion Rel-17 NR\_pos\_enh-Core

Proposal 1: RAN2 to discuss if an NBC is allowed or not, and to merge these two CRs [R2-2207100, R2-2207582] on RRC via offline.

Discussion:

vivo think RAN4 indicated that the exact values are still under discussion, so they wonder if we should agree on the CR yet.

Huawei have the same understanding as vivo that RAN4 are still discussing. They think we can leave this open and see if we get an LS during this meeting, but if RAN4 have no conclusion, we should not include the field. On the NBC change, they think the chair guidelines are clear that we should avoid NBCs if possible. Intel and Qualcomm agree with Huawei.

ZTE think the candidate values are provided by RAN4 and we can capture them; they prefer the BC change, and think some procedural impact in 5.7.13.3 should be added as well.

CATT think RAN4 defined the Rx TEG and Tx TEG values and only the RxTx TEG case is FFS, so we should be able to finalise the rest. They think we need to discuss more about the value associated with the group and ZTE’s change does not allow a separate value for each TEG group.

Intel have the same understanding as CATT that Rx and Tx are resolved but RxTx is open.

Qualcomm prefer to wait for the final LS before putting the values in LPP. They note that we have extension markers and can extend when RAN4 conclude.

Agreements:

Introduce the timing error margin values for the Tx TEG case, using a BC change. Rx and RxTx (in LPP) will be introduced if/when RAN4 provide final values.

Change for Tx to be taken into account in the RRC email discussion [411].

Correction on other issues in RRC:

Proposal 2: RAN2 to discuss if the description ‘and a maximum of up to 32 measurement instances in a single measurement report is supported.’ is essential and merge the modifications in R2-2208073 into RRC CR (proposal 1) via offline.

Discussion:

Qualcomm think this is wrong since RRC does not have the measurement instances. ZTE and Intel agree with Qualcomm. CATT clarify that the CR also includes the limit to

CATT think we could capture the other modification: There may be up to 8 reports of the TEG-SRS association information for each UE Tx TEG ID. vivo think this is already implied by the ASN.1

Qualcomm do not understand the intention; is it that within two periodic reports, there can only be up to 8 time changes in such an interval? Otherwise they do not understand what the report means.

Ericsson think RAN1 had an agreement in this area that was left for RAN2 to capture.

Agreement:

P2 from R2-2208794 to be considered in RRC email discussion [411].

Corrections on timing error margin value of reported TEG in LPP:

Proposal 3: RAN2 to agree for UE-based positioning, the selected Tx-TEG margin for TRP is added in NR-DL-PRS-TRP-TEG-Info.

Proposal 4: RAN2 to discuss if timing error margin is associated with each RxTEG/RxTxTEG ID with its own timestamp, and take the CR [R2-2207099] or [R2-2207581] as a baseline to capture timing error margin values for further polishing via offline.

Discussion:

Intel agree with P3, and for P4 they prefer R2-2207581.

ZTE also prefer R2-2207581 and do not think the timing error margin should be associated with each TEG ID; they understand the UE can only choose one value and it applies to every TEG. They also think the condition tag is necessary, because the timing error margin should only be present when the TEG is present.

Huawei have the same view as ZTE and got similar feedback from their RAN1 and RAN4 colleagues: The margin is applicable for all elements.

CATT think Huawei are correct, but the ZTE CR does not reflect the margin per TEG.

Qualcomm think the RRC change we already agreed is not in line with the ZTE CR; they think we should align LPP with the RRC agreement.

Agreement:

For UE-based positioning, the selected Tx-TEG margin for TRP is added in NR-DL-PRS-TRP-TEG-Info.

Corrections on DL-AoD report in LPP:

Proposal 5: RAN2 to agree removing the condition presence tag and need code for nr-DL-PRS-RSRP-ResultDiff and nr-DL-PRS-FirstPathRSRP-ResultDiff in CR [R2-2207884].

Proposal 6: RAN2 to discuss if it is an essential correction: modify the condition of Rx beam index reporting so that RSRPP reporting is considered and the number of RSRP/RSRPP are counted across multiple resource sets in CR[R2-2207884].

Corrections on additional measurements in LPP:

Proposal 7: RAN2 to agree to take CR [R2-2207882] as a baseline and merge CR [R2-2207578] via offline.

Correction on other issues in LPP:

Proposal 8: RAN2 to agree CR [R2-2207087] and CR [R2-2207102] separately.

Proposal 9: RAN2 to agree the proposed description without ‘and a maximum of up to 32 measurement instances in a single measurement report is supported.’ in R2-2208073, and merge the modification into CR [R2-2207087].

Agreement:

P5/P6/P7/P8/P9 of R2-2208794 to be discussed in the LPP email discussion [424].

* [AT119-e][426][POS] TEG timing error margin in RRC and LPP (CATT)

Scope: Discuss the handling of the TEG timing error margins in RRC and LPP and conclude on an agreeable implementation approach. RAN4 agreements should be taken into account.

Intended outcome: Report to CB session in R2-2208808

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208808](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208808%20%5bAT119-e%5d%5b426%5d%5bPOS%5d%20TEG%20timing%20error%20margin%20in%20RRC%20and%20LPP%20(CATT)_v11_Summary.docx) [AT119-e][426] TEG timing error margin in RRC and LPP (CATT) CATT discussion Rel-17 NR\_pos\_enh-Core

* Revised in R2-2208830

[R2-2208830](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208830%20%5bAT119-e%5d%5b426%5d%5bPOS%5d%20TEG%20timing%20error%20margin%20in%20RRC%20and%20LPP%20(CATT)_v12_Summary.docx) [AT119-e][426] TEG timing error margin in RRC and LPP (CATT) CATT discussion Rel-17 NR\_pos\_enh-Core

Proposal 1: RAN2 to endorse below TP1 on the timing error margin value of reported UE TxTEG in RRC.

Proposal 2: RAN2 to endorse below TP2 on the timing error margin value of TRP TxTEG in LPP.

Proposal 3: RAN2 to endorse below TP3 on the timing error margin value of UE Rx/RxTxTEG in LPP.

[Chair’s note: TPs omitted from notes—refer to R2-2208830]

Proposal 4: RAN2 to send an LS to RAN4 and RAN1 for further clarification:

1. Does ‘the reported value for Tx/Rx/RxTx TEGs can be different at different times’ in R2-2206946 (R4-2210603) mean each timing error margin value should be compulsively associated with each timestamp in the measurement report?

2. Is there only one timestamp in one instance report?

Note: The timestamp in LPP specifies the time instance at which the measurement is performed, taking the form of SFN and slot. Please find the design of NR-TimeStamp of asn.1 as below.

[Chair’s note: ASN.1 omitted from notes—refer to R2-2208830]

Discussion:

CATT clarify that there was some further updating of the TPs, and they think the changes can be taken into account in the LPP CR. For the LS to RAN4, they understand that RAN4 are going to send an LS to RAN1/2/3 indicating that a single timing error margin value is provided per measurement instance in a single LPP message, which is in line with the TPs, so we may not need to send an LS.

CATT further indicate that RAN1 said the measurement instance has its own single timestamp, and we should take an agreement to match this. They understand that the existing structure has 31 timestamps in one instance and it appears the additional timestamps are not meaningful.

Qualcomm are not sure if we are speaking of the TEGs or the measurement instances; they think it is right that if we have multiple measurement instances there should be multiple timestamps.

vivo think the extra timestamps could be set equal. They also agree with Qualcomm that the measurement instance and TEG issues are independent, and think we could agree with the TPs and close this discussion.

ZTE agree with vivo’s comment, and think the LS may be needed.

Nokia think we should not take decisions on an LS before receiving it.

CATT agree that we could take the TPs, and for the additional timestamps we can discuss further next meeting.

Qualcomm think we can endorse the TPs in spirit, but there are details that need to be fixed. In particular, we need to decide if the extension is mandatory or optional. They understand that there is no difference in functionality either way.

vivo would prefer the BC change and having separate IEs for each TEG type. Huawei think we should not do the NBC change.

CATT think the UE is supposed to report a value if Rx TEG is supported. Ericsson have the same understanding. Chair understood that the UE could signal the maximum value by omitting the field. CATT are not sure how the UE can signal the maximum value.

Qualcomm consider that a legacy UE cannot include the margin, so it would be interpreted by the LMF as the maximum margin; and with the extension being optional, omitting it would still mean the maximum value. They also understand that the TEG is useful without the margin.

Ericsson think the issue is only with the procedural text, and they think it is mandatory for the UE to send some value. They think we could check with RAN4 about mandatory/optional and we can be open to NBC changes.

Qualcomm think RAN4 consider it mandatory, but we can clarify in a note that absence means maximum value.

CATT are concerned that a non-legacy UE is required to send the value. Qualcomm understand that this is a RAN4 spec requirement to provide the value, and we specify how it is signalled.

Agreements:

TP1 from R2-2208830 is taken into the RRC CR, with the details to be finalised in CR discussion.

TP2 and TP3 from R2-2208830 are taken into the LPP CR, with the details to be finalised in CR discussion.

All three TPs to be implemented in an ASN.1 BC way (i.e. the extension is optionally present, with a clear explanation that absence of the field means the maximum value).

TEG framework

[R2-2207087](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207087%2037.355%20CR%20for%20clarification%20of%20number%20of%20UE%20Rx%20TEGs.docx) 37.355 CR for clarification of number of UE Rx TEGs OPPO CR Rel-17 37.355 17.1.0 0350 - F NR\_pos\_enh-Core

[R2-2207088](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207088%2037.355%20CR%20for%20introduction%20of%20UE%20Rx%20TEG%20margin%20and%20Tx%20TEG%20margin.docx) 37.355 CR for introduction of UE Rx TEG error margin and Tx TEG error margin OPPO CR Rel-17 37.355 17.1.0 0351 - F NR\_pos\_enh-Core

[R2-2207102](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\37355_CR0354_(Rel-17)_R2-2207102.docx) Corrections on the accuracy enhancements in TS 37.355 CATT CR Rel-17 37.355 17.1.0 0354 - F NR\_pos\_enh-Core

[R2-2207578](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207578%20Correction%20on%20additional%20measurements%20in%2037.355.docx) Correction on additional measurements in 37.355 ZTE, Sanechips CR Rel-17 37.355 17.1.0 0361 - F NR\_pos\_enh-Core

[R2-2207581](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207581%20Correction%20on%20UE%20Rx%20Tx%20RxTx%20TEG%20and%20TRP%20Tx%20TEG%20timing%20error%20margin%20in%2037.355.docx) Correction on UE Rx Tx RxTx TEG and TRP Tx TEG timing error margin in 37.355 ZTE, Sanechips CR Rel-17 37.355 17.1.0 0364 - B NR\_pos\_enh-Core

[R2-2207882](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207882%20Correction%20to%20measurment%20with%20mutliple%20TEGs.docx) Correction to measurment with mutliple TEGs Huawei, HiSilicon, VIVO CR Rel-17 37.355 17.1.0 0369 - F NR\_pos\_enh-Core

[R2-2207582](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207582%20Correction%20on%20UE%20Tx%20TEG%20timing%20error%20margin%20in%2038.331.docx) Correction on UE Tx TEG timing error margin in 38.331 ZTE, Sanechips CR Rel-17 38.331 17.1.0 3286 - B NR\_pos\_enh-Core

[R2-2207583](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207583%20Discussion%20on%20the%20framework%20of%20TEG%20timing%20error%20margin.docx) Discussion on the framework of TEG timing error margin ZTE, Sanechips discussion Rel-17 NR\_pos\_enh-Core

[R2-2208073](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208073%20TEG.docx) On Mitigation of UE/TRP Rx/Tx timing delays Ericsson discussion Rel-17

Measurement report

[R2-2207884](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207884%20Correction%20to%20DL-AoD%20measurement%20report.docx) Correction to DL-AoD measurement report Huawei, HiSilicon CR Rel-17 37.355 17.1.0 0370 - F NR\_pos\_enh-Core

Stage 2 (to be considered in email discussion [408])

[R2-2208494](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208494%20Change%20request%20about%20description%20of%20RSPP%20and%20RSRPP%20in%2038.305.docx) Change request about description of RSPP and RSRPP in 38.305 vivo draftCR Rel-17 38.305 17.1.0 D NR\_pos\_enh-Core

## 6.21 TEI17

### 6.21.2 Corrections

Corrections CRs (Correction to TEI or TEI + other WI code) or detailed modifications to agreed proposals

[R2-2208483](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208483%20Clarification%20on%20NR%20sidelink%20relay%20related%20configuration.docx) Clarification on NR sidelink relay related configuration Huawei, HiSilicon CR Rel-17 36.331 17.1.0 4859 - F TEI17, NR\_SL\_relay-Core

* Agreed

Discussion:

Apple think there is no technical reason why the cross-RAT control is not supported for ProSe and would like to understand the reasoning. Huawei indicate that only NR access was in scope for the SA2 WI, and the support between RAN and CN for ProSe with LTE access is not there.

Ericsson have the same understanding as Huawei, but wonder if it should be captured in RRC or stage 2. Apple think both RRC and 36.300 should reflect the restriction; Ericsson think one or the other is enough.

Huawei think at least the stage 3 CR is needed, since the restriction affects specific fields carried in the container.

Nokia would prefer a clarification in stage 2. CATT would like both. Ericsson are OK with the stage 3 change. InterDigital think stage 3 is sufficient. Nokia can accept stage 3.

=> Agreed

# 8 Rel-18

## 8.2 Expanded and improved NR positioning

(FS\_NR\_pos\_enh2; leading WG: RAN1; REL-18; WID: RP-221814)

Time budget: 1.5 TU

Tdoc Limitation: 3 tdocs

### 8.2.1 Organizational

Including incoming LSs and rapporteur inputs.

Work plan

[R2-2207737](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207737%20Work%20Plan%20for%20Study%20Item%20on%20Expanded%20and%20Improved%20NR%20Positioning.docx) Work Plan for Study Item on Expanded and Improved NR Positioning CATT, Intel Corporation, Ericsson Work Plan Rel-18 FS\_NR\_pos\_enh2

* Noted

Rapporteur summary of RAN1 agreements

[R2-2207387](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207387_RAN1%20agreements%20on%20Expanded%20and%20improved%20NR%20positioning.docx) RAN1 agreements on Expanded and improved NR positioning Intel Corporation discussion Rel-18 FS\_NR\_pos\_enh2

P5 on LPHAP:

Proposal 5: RAN2 can discuss the potential enhancements, but we still need to wait for RAN1 conclusion on the evaluation of power consumption requirement before make final decision.

Discussion:

Apple wonder if it is the best use of our time to discuss something that may not be relevant in the end, and they understand that the objective is to evaluate. So they doubt that we can do anything until RAN1 decide.

CATT wonder how RAN1 can evaluate during the study item, as opposed to evaluating candidate solutions during the WI phase.

Intel clarify that the intention was to allow RAN2 to discuss the feasibility of solutions that have been raised in RAN1 already, while acknowledging that it is RAN1 business to evaluate the power consumption requirement.

vivo understand from RAN1 that the initial simulations show UL positioning is more power-efficient than DL positioning, so the enhancements for UL positioning should be considered in RAN2. They agree with Intel that we can discuss feasibility.

Pre-discussion summary

[R2-2207105](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207105%20Summary%20of%20pre-discussion%20on%20Rel-18%20expanded%20and%20improved%20NR.docx) Summary of pre-discussion on Rel-18 expanded and improved NR positioning CATT discussion Rel-18 FS\_NR\_pos\_enh

* Noted (can consider related proposals in the corresponding agenda items)

### 8.2.2 Sidelink positioning

Study of positioning architecture and signalling procedures (e.g. configuration, measurement reporting, etc) to enable sidelink positioning covering both UE based and network based positioning. Considering relative positioning, ranging and absolute positioning.

[R2-2207081](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207081%20Discussion%20on%20sidelink%20positioning.docx) Discussion on sidelink positioning vivo discussion Rel-18 FS\_NR\_pos\_enh2

Proposal 1: Confirm that for sidelink positioning in-coverage, partial coverage and out-of-coverage scenarios shall be supported.

Proposal 2: Study the architecture and signaling procedures to enable the following two operation scenarios:

- Operation Scenario 1: PC5-only-based positioning.

- Operation Scenario 2: Combination of Uu- and PC5-based positioning.

Discussion:

Nokia think we can consider all scenarios in P1, but think we should perhaps prioritise OOC first.

Huawei think it is the first meeting and we should not prioritise right away. They understand that RAN1 are discussing issues related to the IC case as well.

Lenovo tend to agree that OOC is the new scenario, but agree with Huawei that it is early to prioritise.

Ericsson agree we should not prioritise right away. From network perspective, they think partial coverage is also important.

OPPO agree with Huawei about P1 and think there are aspects of IC that should be handled. They are OK with P2.

ZTE agree with P1 and P2; for P1, they wonder if the coverage scenarios apply to the target or anchor UE or both of them.

Ericsson think in P2 there could be a third scenario based on relaying.

Agreements:

Proposal 1 (modified): Confirm that for sidelink positioning in-coverage, partial coverage and out-of-coverage scenarios shall be supported. FFS if partial coverage case assumes anything about which UEs are in coverage.

Proposal 2: Study the architecture and signaling procedures to enable at least the following two operation scenarios:

- Operation Scenario 1: PC5-only-based positioning.

- Operation Scenario 2: Combination of Uu- and PC5-based positioning.

Proposal 3: Take the two types of architectures as the baseline for signaling procedure discussion of sidelink positioning.

- Type 1: LMF as location server

- Type 2: UE as location server

Discussion:

CATT think this is SA2 scope. They have some concern about the server functionality in PC5-only positioning, and think we should review such scenarios case by case, since having a server UE could mean that all UEs have to be connected to the server.

Xiaomi think the main point is who can calculate the location, and we could distinguish between LMF calculating the location, target UE calculating the location, and anchor UE calculating the location.

vivo understand that the server UE is a logical concept with similar functionality to the LMF, e.g., deciding the location method. They can follow the majority in waiting for SA2, but think we should have a concept of the location types and procedures from RAN2 perspective.

Lenovo agree we should adopt SA2 terminology, but think a server UE would have a lot of RAN implications, e.g., security and capability issues. They would prefer a framing as “LMF-dependent” and “LMF-independent”.

Agreement:

RAN2 follow SA2 on the architecture, including the possibility of a UE as a location server. FFS from RAN2 perspective if there are cases without a UE in the location server role.

Proposal 4: Align with SA2/RAN1 on the terms for sidelink positioning, and introduce the following terms of UE role as the baseline for further discussion:

- Target UE: UE to be positioned

- Location Server UE: A UE offering location server functionality in lieu of LMF, for sidelink Positioning and Ranging over PC5.

- Anchor UE: UE supporting positioning of target UE, e.g., by transmitting and/or receiving reference signals for positioning, providing positioning-related information, etc., over the SL interface. For absolute positioning, the Anchor UEs’ locations are known.

Discussion:

Huawei understand that SA2 are discussing additional UE roles, e.g., reference UE, and they wonder why we capture the server UE term now.

Ericsson think the server UE has security implications that need to be evaluated.

Apple think “providing positioning-related information” in the anchor definition is unclear. vivo clarify this language came from RAN1; they understand that it refers to measurements or location estimates.

Intel think it would be useful to have a server UE concept at least for the OOC case, but can agree to the target and anchor terms now for progress.

Agreement:

Proposal 4 (modified): Align with SA2/RAN1 on the terms for sidelink positioning, and introduce the following terms of UE role as the baseline for further discussion:

- Target UE: UE to be positioned

- Anchor UE: UE supporting positioning of target UE, e.g., by transmitting and/or receiving reference signals for positioning, providing positioning-related information, etc., over the SL interface. FFS: clarification of the knowledge of the anchor UE.

Additional roles can be considered.

Proposal 6: Introduce a new protocol for sidelink positioning procedures between UEs, i.e., Ranging/Sidelink Positioning Protocol (RSPP).

Discussion:

CATT, Samsung, Nokia, and Lenovo prefer the term SLPP.

Intel, Apple, and Ericsson wonder if we would have a separate spec from LPP. Huawei think it should be a separate ASN.1 module, and we can further discuss whether it is a separate spec.

Sony wonder if the scope of the new protocol is clear, e.g., which UE roles it will be used between. Qualcomm think this can be part of our study activity. Huawei agree with Qualcomm.

MediaTek agree with Huawei that it should be a separate ASN.1 module.

Qualcomm think we have a requirement for such a protocol and it should be a separate module.

OPPO wonder if the separate module would imply anything about using the same spec. They think extending LPP to include this functionality would be complex.

Vodafone wonder why we cannot have a separate specification.

CATT wonder when the decision on a separate specification should be made; they share Vodafone’s views that a separate specification is needed. Intel understands that it could be decided in RAN plenary when we create the WID.

Agreements:

Introduce a new protocol for sidelink positioning procedures between UEs (name FFS, e.g., RSPP, SLPP). FFS where it is specified.

The new protocol is a separate ASN.1 module from LPP (this does not necessarily imply whether it is included in 37.355).

Proposal 5: Reuse and extend the LPP for sidelink positioning procedures between UE and LMF.

Discussion:

CATT think we agreed there are two scenarios: PC5-only and PC5+Uu, and they think we should use the new protocol for PC5-only but discuss case by case on PC5+Uu.

Qualcomm agree that we need to look more carefully, but they currently think there is no need to update LPP, because the functionality required will be the same as the new protocol. One alternative would be to transport RSPP/SLPP within LPP, similar to the structure for LPPe, and this would avoid duplicating functionality.

Huawei think at least for the PC5+Uu case, some extension to LPP will be needed, even if only to transport the new protocol. So they are OK with P5.

Lenovo tend to agree with CATT and Qualcomm that the new protocol can handle the new functionality and specific enhancements for LPP may not be needed. However, for the PC5+Uu case they think there could be cases where LPP would be extended.

OPPO think apart from the PC5+Uu case, considering the PC5-only scenario IC, the LMF needs to be involved and the quick way to achieve this is to improve the LPP protocol. They see no reason not to involve LPP.

Apple think it is clear that some enhancements to LPP will be needed, perhaps as described by Qualcomm; they suggest we could in future discuss the PC5-only and PC5+Uu cases separately.

Agreement:

Study the potential impact to LPP for support of sidelink positioning procedures between UE and LMF. FFS how much impact (if any), e.g., only to carry the new protocol, and if the PC5-only and hybrid PC5+Uu cases are the same or different.

Proposal 7: Study the protocol stack for the new protocol RSPP, the alternatives include:

- Alt 1: CP-based solution, with new protocol over V2X/ProSe layer, e.g., PC5-D, PC5-S;

- Alt 2: UP-based solution, with new protocol over PC5-U.

- Alt 3: CP-based solution, with new protocol over PC5-RRC.

- Alt 4: CP-based solution, with new protocol over PDCP.

Proposal 8: For Type 1 sidelink positioning, capture the above signaling procedures into the TR as the baseline.

Proposal 9: For Type 1 sidelink positioning, the potential standard impact includes enhancing the LPP messages about Capability transfer, Assistance Data transfer, and Location Information Transfer.

Proposal 10: For Type 2 sidelink positioning, capture the above signaling procedures into the TR as the baseline.

Proposal 11: For Type 2 sidelink positioning, the potential standard impact includes new RSPP messages for the procedures between UEs, including Capability transfer, Assistance Data transfer, and Location Information Transfer.

Proposal 12: When RAN2 concludes on the standard impact, LS to SA2 if needed, e.g., on protocol stack and discovery enhancement.

Proposal 13: Study essential solutions to support the latency and efficiency requirements for sidelink positioning, the potential optimization aspects include:

- reducing the interaction and latency of configuration signaling,

- reducing unnecessary PC5 and/or Uu connection establishment,

- reducing the probability of positioning failure due to inappropriate configuration.

P8/P9/P11/P12

[R2-2207865](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207865_SLPos_Solutions_Lenovo.docx) On SL Positioning Architecture and Procedures Lenovo discussion Rel-18

Proposal 8: SL positioning to re-use some of the existing SL functionality related configuration and resource allocation.

Proposal 9: RAN2 further study the triggering mechanism and alignment of SL Positioning/ranging QoS for RAN-based procedures to meet the service requirements, since this may be different from the existing SL communication mechanism.

Discussion:

CATT would like to understand the meaning of “triggering mechanism”; they understand that the triggers for the positioning procedures are designed by SA2.

vivo wonder if the proposal means that the UE can request SL-PRS resources, analogous to the on-demand PRS in Rel-17, based on QoS requirements.

Huawei agree with CATT, and think similar to the MO-LR, MT-LR, etc., the triggering mechanism should be designed in SA2.

Lenovo intend that we consider this in terms of resource coordination, e.g., the triggering of a request for SL resources based on positioning procedures. They think this part is under RAN2 scope.

Intel think the triggering relates to something like the MO-LR/MT-LR and should be discussed in SA2.

Nokia wonder if this is about SA2 defining the stage 2 procedures or checking the impact to LCS procedures; should we send an LS? Ericsson see no need for an LS and find the agreement a bit strange. CATT think SA2 are discussing the service types already.

Agreement:

RAN2 wait for SA2 on the triggering of the positioning procedures from upper layers.

Proposal 11: RAN2 to further study Mode 1 coordination of SL PRS resources for one or more UEs participating in a SL positioning session (e.g., one or more anchor UEs and a target-UE).

Proposal 12: RAN2 to further study Mode 2 coordination of SL PRS resources for one or more UEs participating in a SL positioning session e.g., one or more anchor UEs and a target-UE) including at least:

• The use of pre-configured resources in out-of-coverage scenarios.

• Initiator UE (e.g., target UE) indicates the SL-PRS resource to other UEs involved in SL Pos (e.g., one or more anchor UEs) over sidelink.

Discussion:

Huawei think RAN1 have touched on the use of mode 1 and mode 2, and from RAN2 perspective there may not be much we can do; if any agreement comes from RAN1 we will take it into consideration.

Intel have a similar understanding to Huawei; they see that the proposals assume we will have a similar resource pool structure for positioning to what is there in Rel-17, and this is still under discussion in RAN1. They are OK with the study of mode 1 and mode 2, but they think we should follow RAN1.

CATT think we agreed that both mode 1 and mode 2 should be considered, and RAN2 further discussion can take into account two cases: (1) the UE sends the signals by itself, and (2) multiple UEs send the signals from different cells. They think we can take both cases into account and follow RAN1 decisions.

InterDigital have a similar understanding to other companies, and think from RAN2 perspective we could clarify if mode 2 would still be applicable in IC scenarios.

OPPO think this topic is RAN1-dependent and relates to the sensing procedure. Regarding InterDigital’s question, they think this is also an area where we can depend on RAN1 discussion; it would matter, e.g., if sensing is available in the IC scenario.

Lenovo think it is reasonable to follow RAN1’s lead, but they do see that there could be impact from having multiple UEs involved.

Nokia wonder if we can capture the definition of mode 1 and mode 2, or provide a cross-reference. Chair clarifies that the modes are inherited from Rel-16 sidelink, with mode 1 gNB-scheduled and mode 2 based on UE resource selection.

Sony think the support of mode 1 and mode 2 is a conceptual question related to coverage, and the question may be whether to support mode 2 IC.

Selected proposals from R2-2207105 on SL positioning

Scenarios and requirements aspect:

Proposal 2: RAN2 to agree in-coverage, out-of-coverage and partial-coverage applicable to all the use cases.

Proposal 3: RAN2 to agree U2U relay scenarios are not included in the SI.

Proposal 4: RAN2 to further discuss whether U2N relay scenario is included in the SI.

UE roles and positioning models aspect:

Proposal 7: RAN2 to agree the following two roles defined by RAN1 are reused in RAN2:

• Target UE: UE to be positioned (in this context, using SL, i.e. PC5 interface).

• Anchor UE: UE supporting positioning of target UE, e.g., by transmitting and/or receiving reference signals for positioning, providing positioning-related information, etc., over the SL interface.

FFS: clarification of the knowledge of the location of the anchor UE

Proposal 10: RAN2 to agree SL-PRS transmission between Target UE and Anchor UE(s) include: Target-to-Anchor, Target-to-many Anchors and many Anchors-to-Target.

Proposal 11: RAN2 to further discuss the signalling transmission between Target UE and Anchor UE(s): Target-to-Anchor, Target-to-many Anchors and many Anchors-to-Target.

Protocol stack aspect:

Proposal 15: For hybrid Uu and PC5 positioning, RAN2 to discuss sidelink positioning signallings exchange between the target UE and the LMF, the candidate options are below:

- Option 1: New protocol (RSPP or SLPP) is also used for sidelink positioning signallings exchange between the target UE and the LMF (2/7);

- Option 2: Extend existing LPP to support hybrid Uu and PC5 positioning (5/7).

Other issue:

Proposal 16: RAN2 to discuss the cast types that can be supported for SL positioning, i.e. whether broadcast/ groupcast can be considered for SL positioning.

Discussion:

Ericsson think cast types should be studied.

Lenovo support the intention of the proposal, but they would like to understand if groupcast would cover the one-to-many and many-to-one transmissions of SL-PRS.

CATT understand that for the one-to-many and many-to-one SL-PRS transmissions, it refers to SL-PRS transmission. They intended the proposal to refer to the SL-PRS.

Qualcomm tend to agree that RAN2 should consider this, focussing on the use cases in the SID, and they would like to see the question discussed for signalling as well as SL-PRS.

CATT clarify that there were differing views on the signalling aspect in the pre-discussion, but companies agreed that the SL-PRS transmission is easier to address.

Agreement:

RAN2 will study the question of cast type for positioning signalling. For SL-PRS, follow RAN1 decision and consider cast type if something arises in RAN2 scope.

[R2-2207090](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207090%20Discussion%20of%20sidelink%20positioning.docx) Discussion of sidelink positioning OPPO discussion Rel-17 FS\_NR\_pos\_enh2

[R2-2207106](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207106-SL%20positioning.doc) SL Positioning Architecture and Protocol Stack CATT discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207229](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207229.docx) Discussion of sidelink positioning procedures Nokia Germany agenda

* Revised in R2-2208685

[R2-2208685](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208685.docx) Discussion of sidelink positioning procedures Nokia, Nokia Shanghai Bell discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207286](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207286.docx) Principles for sidelink positioning MediaTek Inc. discussion Rel-18

[R2-2207388](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207388.docx) Support of sidelink positioning Intel Corporation discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207435](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207435-sl-positioning-sl.docx) On Sidelink Positioning Architecture Apple discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207486](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207486%20(R18%20NR%20POS%20SI%20A822_SLPos).doc) Discussion on Sidelink Positioning InterDigital, Inc. discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207586](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207586%20Discussion%20on%20sidelink%20positioning.docx) Discussion on sidelink positioning ZTE, Sanechips discussion Rel-18 NR\_pos\_enh-Core

[R2-2207684](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207684%20Discussion%20on%20potential%20solutions%20for%20SL%20positioning.docx) Discussion on potential solutions for SL positioning Spreadtrum Communications discussion Rel-18

[R2-2207828](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207828_POS_SL.docx) Considerations on sidelink positioning Sony discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207868](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207868%20Discussion%20on%20sidelink%20positioning_final.docx) Discussion on sidelink positioning Huawei, HiSilicon discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2208080](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208080%20SL.docx) SL positioning Ericsson discussion Rel-18

[R2-2208126](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208126_(Sidelink%20Positioning).docx) Study of Sidelink Positioning Architecture, Signaling and Procedures Qualcomm Incorporated discussion

[R2-2208253](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208253_Protocol%20considerations%20for%20sidelink%20positioning_clean.docx) Protocol considerations for sidelink positioning Philips International B.V. discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2208301](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208301%20Discussion%20on%20functions%20of%20LMF%20in%20SL%20positioning.docx) Discussion on functions of LMF in SL positioning Samsung discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2208320](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208320%20Discussion%20on%20OOC%20SL%20.docx) Discussion on out-of-coverage sidelink positioning Samsung R&D Institute UK discussion

[R2-2208453](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208453%20Initial%20considerations%20on%20Sidelink%20positioning.doc) Initial considerations on Sidelink positioning CMCC discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2208582](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208582%20Discussion%20on%20SL%20positioning.doc) Discussion on SL positioning Xiaomi discussion Rel-18

### 8.2.3 RAT-dependent integrity

Study methodologies, procedures, signalling, etc for determination of positioning integrity for both UE-based and UE-assisted positioning. Focus on reuse of concepts and principles being developed for RAT-Independent GNSS positioning integrity, where possible. Identification of error sources may require input from RAN1.

[R2-2207389](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207389%20_support%20of%20RAT%20dependent%20integrity.docx) Support of RAT dependent integrity Intel Corporation discussion Rel-18 FS\_NR\_pos\_enh2

Proposal 1: RAN2 to confirm the integrity principle of operation defined in the section 8.1.1a of TS38.305, including integrity definition (Error, Bound, Time to Alert, DNU, Residual Risk, irMinimum, irMaximum and Correlation Times), Equations for the GNSS integrity are reused for RAT dependent positioning methods.

Proposal 2: RAN2 may add the mapping between Integrity definition/Fields (Integrity Alerts, Integrity Bounds (mean, StdDev), Residual Risks, Integrity correlation times ) and Error sources/assistance data for RAT-dependent positioning methods later once RAN1 identifies new error sources.

Discussion:

Intel understand that the GNSS integrity baseline can be reused for RAT-dependent positioning, with the exception of UL positioning.

CATT generally agree with the proposals, but on proposal 2, they think it should say “error bounds” instead of “integrity bounds”. Intel confirm this was the intention.

Apple agree with the principle but think we should not copy everything blindly. For instance, they think we may not need the DNU flag.

InterDigital have a similar understanding and would like some further clarification on whether to have a mapping between different positioning methods/techniques and the integrity approaches (e.g. UE-based vs. LMF-based). They see value in such a mapping and think it could help clarify what can be reused. On Apple’s point, they also think the DNU flag should be discussed.

Ericsson agree with Apple that we should follow GNSS on the high level.

Intel think the mapping can be done later in relation to RAN1 discussion on the error sources.

ZTE think the proposals are basically acceptable, and the specific definitions can be left FFS.

Agreements:

Proposal 1: RAN2 to confirm the integrity principle of operation defined in the section 8.1.1a of TS38.305, including integrity definition (e.g., Error, Bound, Time to Alert, DNU, Residual Risk, irMinimum, irMaximum and Correlation Times; FFS if all parameters are needed in the RAT-dependent case), Equations for the GNSS integrity are reused for RAT dependent positioning methods.

Proposal 2 (modified): RAN2 may add the mapping between Integrity definition/Fields (Integrity Alerts, error bounds (mean, StdDev), Residual Risks, Integrity correlation times ) and Error sources/assistance data for RAT-dependent positioning methods later once RAN1 identifies new error sources.

Proposal 3: RAN2 to agree the text proposal on integrity for RAT-dependent positioning methods:

[R2-2207869](file:///C:\\Users\\mtk16923\\Documents\\3GPP%20Meetings\\202208%20-%20RAN2_119-e,%20Online\\Extracts\\R2-2207869%20Discussion%20on%20RAT-dependent%20integrity_final.docx" \o "C:Usersmtk16923Documents3GPP Meetings202208 - RAN2_119-e, OnlineExtractsR2-2207869 Discussion on RAT-dependent integrity_final.docx) Discussion on RAT-dependent integrity Huawei, HiSilicon discussion Rel-18 FS\_NR\_pos\_enh2

Huawei think P1 can be skipped in light of the previous discussion.

Proposal 1: Reuse the integrity KPIs, relevant use cases, PL calculation and integrity determination of GNSS integrity for RAT-dependent positioning integrity.

Proposal 2: Classify the feared events for RAT-dependent positioning as follows:

• Feared events in the positioning assistance data: such as TRP location, Inter-TRP synchronization errors (e.g., RTD)

• Feared events during positioning data transmission: such as data integrity faults

• gNB feared events: such as local environment feared events (e.g. Multipath, Spoofing, Interference) and TRP measurements errors

• UE feared events: such as UE measurements errors

• LMF feared events: such as hardware faults and software faults

Discussion:

CATT think there is something to discuss in P1, because Rel-17 did not include the integrity determination aspects.

Qualcomm think P2 is generally OK, but the details should wait for RAN1 outcomes. If we take a conclusion now it should be to “consider” rather than “classify”. Ericsson and Intel agree with Qualcomm.

Qualcomm are also not sure if this helps to progress the work.

Proposal 3: Study the decoupling of integrity calculation and positioning calculation.

Discussion:

Huawei clarify that the intention is that in Rel-17, the integrity KPI comes from the service layer, but here they wonder if it is possible to support integrity as a network maintenance procedure: e.g., the LMF wants to know the status of the network and triggers an integrity procedure independent of a positioning operation.

Nokia interpreted this proposal as relating to integrity determination, but considering that we reuse the GNSS framework, they understand that P3 says we would not rely only on the service layer, and they think some clarification may be needed.

Nokia think we can confirm that RAT-independent is a baseline and extensions are not precluded, e.g., UE-based integrity determination.

Qualcomm think extensions can be discussed case by case. On P3, they think integrity and positioning cannot be decoupled in principle, and they wonder if Huawei’s use case has standards impact or is just an implementation aspect. They think we do not have to specify how the network obtains the integrity.

Huawei clarify that the proposal may not have RAN2 spec impact, but at the system level there could be impacts on e2e procedures that would be reflected in SA2. However, the topic is RAN2-led, so they think it could be discussed here.

Lenovo understand that the integrity calculation and the positioning calculation should be done by the same entity, without decoupling. They see signalling complexity if we would decouple the two.

OPPO think that SA2 should look at whether there is an LMF requirement to trigger the operation.

Proposal 4: Study the support for timing-based positioning methods (DL-TDOA, UL-TDOA, multi-RTT) and angle-based positioning methods (DL-AoD and UL-AoA) for RAT-dependent integrity. Deprioritize the study for the positioning integrity support of NR E-CID.

Discussion:

OPPO support P4 and think we need to investigate these methods.

Huawei understand that in the last RAN1 meeting, RAN1 only discussed on the measurements for the timing and angular methods; they think the important point here is to deprioritise E-CID.

Intel think the error sources are in RAN1 scope and it is not so clear from RAN2 perspective what we would study now.

Nokia understood that P4 is just saying that we agree which methods apply for RAT-dependent integrity. They think it makes sense to deprioritise NR E-CID, because they do not expect it to be used in the use cases where integrity is needed, but they think no explicit requirement is needed.

ZTE think we could prioritise timing- and angle-based cases, and wait for RAN1 on E-CID.

vivo wonder what this means for RAN2, since the error causes are in RAN1 scope. They think RAN2 should focus more on the procedures.

Ericsson have the same understanding as Intel and vivo. Lenovo and CATT also agree.

Proposal 5: RAN2 to study the assistance data for the feared events require reporting of RAT-dependent positioning based on RAN1 input.

Proposal 6: Prioritize the study of UE-based RAT-dependent positioning integrity for DL positioning.

Discussion:

Xiaomi understand that in Rel-17, we prioritised UE-based integrity due to time limitations, but in Rel-18 they would like to see both UE-based and LMF-based integrity.

Ericsson think GNSS is suitable for UE-based integrity, but RAT-dependent raises other use cases like IIoT where the network has to fulfil some of the requirements, so they do not see that UE-based should be prioritised; if anything they think UE-assisted should be the higher priority since we do not have a baseline from Rel-17 to follow.

Apple support P6 but think we should not exclude anything completely.

CATT think from the real use case perspective, the operators need to offer integrity integration to third parties, especially in factory use cases; they therefore see it as important to offer LMF-based integrity.

Nokia agree with P6 in the broad sense that we should cover UE-based integrity.

OPPO think UE-based should be used for DL positioning methods due to the simplicity of the signalling, and the UE could send the integrity result to the LMF if it is needed by a third party. They see additional signalling overhead in the LMF-based case, e.g., due to transferring measurement results.

ZTE think we do not need to prioritise and UL positioning methods need to be considered; they think LMF-based integrity is also desired.

vivo suggest we study both UE-based and UE-assisted cases, noting that we discussed coupling of integrity and positioning operations.

Intel wonder if this is in scope. They understand that the baseline should be what we have in Rel-17, and only if we run into a problem should we introduce something new, but we can study whether there are problems with UL positioning.

Qualcomm would be OK with P6; from RAN2 pov, they do not see the impact of UE-assisted mode, since the network calculates the position and it should have all the needed information. If there are missing measurements, they should come from RAN1 and not require study in RAN2.

Ericsson generally agree with Qualcomm, and they think we should not take decisions at this stage that are method-dependent. For UE-assisted, they agree with Qualcomm that there may not be much if any RAN2 impact, and they see interest in supporting it. They see the UE-assisted integrity case as useful in connection with UE-assisted DL positioning, which may be common in IIoT scenarios..

CATT think the procedures for location calculation are already there, and the procedures for calculating the PL can accompany them. They do not see a need to prioritise. From the use case perspective, they think support of LMF-based integrity is important, including both DL and UL cases.

Proposal 7: If LMF/UE-based integrity is supported, study the following signaling aspects for RAT-dependent integrity:

 LPP Signalling

 Signalling for RAT-dependent positioning integrity capability

 Signalling to deliver the integrity assistance data (e.g. gNB/UE feared events)

 Signalling to deliver the integrity related positioning measurements

 NRPPa Signalling

 Signalling to deliver integrity assistance data (e.g. gNB feared events) from gNBs to LMF

 Signalling to deliver the integrity related positioning measurements from gNBs to LMF

 Signalling to deliver the integrity assistance data (e.g. UE feared events) send by RRC to LMF for UL positioning methods

 RRC signaling

 Signaling to deliver the integrity assistance data (e.g. UE feared events) from UE to gNB for UL positioning methods

Selected proposals from R2-2207105 on RAT-dependent integrity

Proposal 17: RAN2 to agree to support the UE-based integrity with normal error sources and unexpected faults, i.e., UE to calculate the PL.

Proposal 18: RAN2 to agree to support the UE-assisted/LMF-based integrity with normal error sources and unexpected faults, i.e., LMF to calculate the PL.

Proposal 19: RAN2 to agree the UE-based mode integrity procedure and signalling based on the R17 definitions and principle of operation of GNSS integrity.

Proposal 20: RAN2 to further discuss whether the LMF need to provide the AL and TTA to UE, and whether need to support both mode 1 and mode 2 reporting.

Proposal 21: RAN2 to agree that it is common understating that in NG-RAN node assisted mode, LMF calculates the PL, and NG-RAN node need to provide associated error sources or feared events.

Proposal 22: RAN2 to further discuss whether to introduce the NG-RAN node assisted mode firstly or wait for RAN3’s conclusion.

Focus on TP

[R2-2208127](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208127_(integrity).docx) Integrity of NR Positioning Technologies Qualcomm Incorporated discussion

Discussion:

Qualcomm clarify that the intention was that if we agree to reuse the GNSS integrity concept, the RAN2 implications are fairly clear; the TP captures the integrity concept of operation. They think it is in line with Intel’s TP in concept, but this version avoids cross-reference to the GNSS text.

Intel do not have a strong opinion on whether to copy more details into the TR or just have a short description; they intended to have a simple TP referring to the stage 2. However, they think we may not be able to conclude on text until closer to the end of the SI.

InterDigital have a similar understanding with Intel and think discussion can continue at the next meeting. They note that this TP refers to the DNU flag, and they are not sure if the same principle would apply to the RAT-dependent cases.

[R2-2207082](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207082%20Discussion%20on%20RAT-dependent%20integrity.docx) Discussion on RAT-dependent integrity vivo discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207107](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207107-Integrity.docx) Discussion on RAT dependent integrity CATT discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207487](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207487%20(R18%20NR%20POS%20SI%20A823_Integrity).doc) Discussion on RAT-dependent Integrity InterDigital, Inc. discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207585](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207585%20Discussion%20on%20RAT-dependent%20methods%20positioning%20integrity.docx) Discussion on RAT-dependent methods positioning integrity ZTE, Sanechips discussion Rel-18 NR\_pos\_enh-Core

[R2-2207685](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207685%20Discussion%20on%20solutions%20for%20integrity%20of%20RAT-dependent%20positioning%20techniques.docx) Discussion on solutions for integrity of RAT-dependent positioning techniques Spreadtrum Communications discussion Rel-18

[R2-2207702](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207702_Discussion%20on%20RAT-dependent%20Positioning%20%20integrity.doc) Discussion on RAT-dependent positioning integrity Lenovo discussion Rel-18

[R2-2207829](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207829_POS_Integrity.docx) Considerations on solution for integrity of RAT dependent positioning Sony discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207911](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207911%20Discussion%20on%20RAT-dependent%20positioning%20integrity.doc) Discussion on RAT-dependent positioning integrity Xiaomi discussion

[R2-2208079](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208079%20Integrity.docx) RAT-dependent integrity Ericsson discussion Rel-18

[R2-2208318](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208318%20Discussion%20on%20integrity%20of%20RAT%20dependent%20positioning%20techniques%20.docx) Discussion on integrity of RAT dependent positioning techniques Samsung R&D Institute UK discussion

[R2-2208322](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208322%20RAT-dependent%20Positioning%20Integrity.docx) Discussion of RAT-dependent positioning integrity Nokia, Nokia Shanghai Bell discussion Rel-18 FS\_NR\_pos\_enh2

### 8.2.4 LPHAP

Study the requirements on LPHAP as developed by SA1 and evaluate whether existing RAN functionality can support these power consumption and positioning requirements. Based on the evaluation, and, if found beneficial, study potential enhancements to help address any limitations.

[R2-2208180](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208180%20LPHAP.docx) Use case and area of focus for LPHAP study Nokia, Nokia Shanghai Bell discussion- Rel-18 FS\_NR\_pos\_enh2

Proposal 1: RAN2 shall restrict the use case for any LPHAP discussions in RAN2 to Tracking of workpiece (in- and outdoor) in assembly area and warehouse (Use case # 6 in Table A.7.2-1 in TS 22.104).

Discussion:

CATT think it is good to clarify the use case, and they think the LPHAP devices may be different from normal commercial UEs.

Proposal 2: RAN2 to use the ‘Low Power Periodic and Triggered 5GC-MT-LR Procedures’ in TS 23.273, which also includes the UE positioning procedures between UE and LMF (LPP procedures), in their study on LPHAP.

Discussion:

Huawei think this proposal is similar to the discussion in Rel-17: There might be procedural enhancements that we need to discuss, and they would prefer not to narrow down the procedural cases at the first meeting.

Ericsson agree with P2.

Apple think we should look at P3 first. Nokia indicate that P3 is intended in relation to the accuracy requirements of existing methods, and the intention is that we would not spend time evaluating the accuracy of existing methods, so they see it as independent of P2.

Nokia clarify that P2 is not intended to exclude other procedures but to align on this one as a baseline for looking at the enhancements.

CATT think we can agree that at least deferred MT-LR is expected in Rel-18, but they understand that several companies are interested in other services (MO-LR, MT-LR) as well. So they think we could keep other services in scope.

Qualcomm support P2 as a baseline for evaluating enhancements; they do not see the use case for LPHAP with MO-LR or MT-LR, but in any case think these procedures would not result in fundamentally different enhancements.

vivo are fine with the proposal, but they think we should not spend too much time on it. They understand that there are other considerations besides power consumption that should be kept in mind, e.g., mobility requirements (this relates to P4).

Intel wonder if RAN2 will analyse power consumption, and they do not see a benefit to agree to P2 if we do not do such analysis. They understand that the low-power periodic MT-LR is for NB-IoT, and they wonder why we take this as the baseline.

Nokia indicate that they do not intend for RAN2 to do power evaluation (as indicated also by P4), and the selection of procedure was specifically for use case 6; TS 22.104 has a different requirement for workpiece tracking compared to tool tracking, and they understand that the workpieces require periodic positioning. They are open to discussing deferred MT-LR in general. They agree with Qualcomm that MO-LR and MT-LR are not required for use case 6.

vivo think we should not spend more time on this aspect now as it took a lot of time in Rel-17.

OPPO think this is not really a RAN2 topic and we could consider sending an LS to SA2. They understand that use case 6 talks about the character of the transmission but not where the location request comes from, and SA2 could help us determine whether, e.g., MO-LR should be in scope.

Qualcomm understand that the requirements are from SA1, and SA2 have not discussed LPHAP. Intel have the same understanding. OPPO think in that case an LS could be sent to SA1.

Intel think SA1 will not discuss what procedures should be used for their use cases.

Nokia think it is clear from 22.104 that use case 6 makes a distinction between tracking workpieces and tracking other devices, and that periodic positioning is required. They think the only thing we could ask SA1 is to confirm our understanding of the periodic requirement.

Nokia point out that this is a RAN2-led objective and think we could take a decision on this point. Huawei agree.

Proposal 3: RAN2 shall not spend time on evaluating the performance of current Rel-16/Rel-17 NR positioning methods to see if they meet LPHAP positioning accuracy requirements.

Proposal 4: RAN2 shall wait for RAN1 conclusions from evaluations on UE power consumption but already start investigating (study) potential areas for higher layer enhancements that may result in reduction of UE power consumption.

Discussion:

CATT have a concern on P4, because from higher-layer perspective we can still discuss how to reduce power consumption. They do not intend that we would do evaluations, but we can discuss potential enhancements for power consumption.

ZTE share the view of CATT and wonder if we would require RAN1 to evaluate every enhancement we make. Lenovo and CMCC also agree with CATT.

Nokia clarify that this was intended for the baseline functionality and need for enhancements.

ZTE wonder if this means RAN2 would not take the decision on any specific enhancements. Chair understands that the proposal is scoped to determining if the existing functionality can meet the power consumption requirements, and does not speak to requiring RAN1 approval for implementing any specific enhancements. Intel and Ericsson agree with the chair’s explanation.

Apple want to confirm that if RAN1 decide the existing functionality does address the requirements, we would do nothing. Chair indicates this would ultimately be a plenary decision.

Agreements:

Proposal 1: RAN2 shall restrict the use case for any LPHAP discussions in RAN2 to Tracking of workpiece (in- and outdoor) in assembly area and warehouse (Use case # 6 in Table A.7.2-1 in TS 22.104).

RAN2 to consider at least the ‘Low Power Periodic and Triggered 5GC-MT-LR Procedures’ in TS 23.273. Other procedures are not excluded from discussion.

RAN2 shall wait for RAN1 conclusions from evaluations on UE power consumption with respect to baseline functionality and whether enhancements are needed. RAN2 will study potential areas for higher layer enhancements that may result in reduction of UE power consumption.

[R2-2207488](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207488%20(R18%20NR%20POS%20SI%20A824_LPHAP).doc) Discussion on LPHAP InterDigital, Inc. discussion Rel-18 FS\_NR\_pos\_enh2

Proposal 1: Study the impacts to UL-based and DL-based positioning methods when supporting network initiated SDT (MT-SDT) for UE in INACTIVE

Proposal 2: Study procedure and signalling enhancements for supporting UL-based (e.g. UL-TDOA, UL-AOA), DL-based (DL-TDOA, DL-AOD) and UL+DL based (e.g. multi-RTT) positioning methods in IDLE state

Proposal 3: Study whether and how PRACH can be used for supporting UL-based positioning in IDLE state

Proposal 4: Study whether and how SRSp transmission can be supported during initial access procedure

Proposal 5: Study how the measurements reports, or location estimates can be sent by the UE with initial access messages when supporting DL-based positioning in IDLE state

Selected proposals from R2-2207105 on LPHAP

Proposal 23: RAN2 to agree to take the deferred MT-LR as the basic service type and other service type are not excluded.

Proposal 24: RAN2 to agree to study the valid area mechanism for SRS.

Proposal 26: RAN2 to discuss whether to support DL and UL positioning in RRC\_IDLE state;

Proposal 25: RAN2 to discuss the following candidate enhancements:

- Optimize paging, RRM measurement for the power saving;

- If MT-SDT is supported, consider possible enhancements on UL-based and DL-based positioning methods;

- Enhance SRS configuration request to reduce signalling overhead;

- Enhancement on the event report;

- Optimize PRS configuration to enhance DL positioning;

- Optimize DL-PRS configuration by (e)DRX information;

- Enable gNB to make informed decision on RRC state transition;

- Enabling LPP message segmentation in cooperation with LCS messages;

- Support LPHAP UE identification for gNB and/or LMF.

[R2-2207083](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207083%20Discussion%20on%20LPHAP.docx) Discussion on LPHAP vivo discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207089](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207089%20consideration%20on%20LPHAP.docx) Consideration on LPHAP OPPO discussion Rel-17 FS\_NR\_pos\_enh2

[R2-2207111](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207111%20Discussion%20on%20LPHAP.DOCX) Discussion on LPHAP CATT discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207390](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207390%20_support%20of%20LPHAP.docx) Support of LPHAP Intel Corporation discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207436](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207436-LPHAP-v0.docx) On LPHAP Apple discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207584](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207584%20Discussion%20on%20LPHAP.docx) Discussion on LPHAP ZTE, Sanechips discussion Rel-18 NR\_pos\_enh-Core

[R2-2207703](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207703_Discussion%20on%20low%20power%20high%20accuracy%20positioning.doc) Discussion on low power high accuracy positioning Lenovo discussion Rel-18

[R2-2207830](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207830_POS_LPHAP.docx) Considerations on solution for Low Power High Accuracy Positioning Sony discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2207867](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207867%20Discussion%20on%20the%20LPHAP_final.docx) Discussion on the LPHAP Huawei, HiSilicon discussion Rel-18 FS\_NR\_pos\_enh2 Revised

* Revised in R2-2208626

[R2-2208626](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208626%20Discussion%20on%20the%20LPHAP_final.docx) Discussion on the LPHAP Huawei, HiSilicon, Deutsche Telekom discussion Rel-18 FS\_NR\_pos\_enh2 R2-2207867

[R2-2207912](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207912%20Discussion%20on%20LPHA%20Positioning.doc) Discussion on LPHA positioning Xiaomi discussion

[R2-2208078](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208078%20LPHAP.docx) Discussion on Low Power High Accuracy Positioning Ericsson discussion Rel-18

[R2-2208128](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208128_(LPHAP).docx) Limitations of RRC\_INACTIVE positioning for LPHAP Qualcomm Incorporated discussion

[R2-2208454](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208454 Initial considerations on LPHAP.doc) Initial considerations on LPHAP CMCC discussion Rel-18 FS\_NR\_pos\_enh2

## 8.9 Enhanced NR Sidelink Relay

(NR\_SL\_relay\_enh-Core; leading WG: RAN2; REL-18; WID: RP-221262)

Time budget: 1 TU

Tdoc Limitation: 3 tdocs

### 8.9.1 Organizational

Including incoming LSs and rapporteur inputs.

Work plan

[R2-2208345](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208345%20SL%20relay%20work%20plan.doc) Work plan for NR sidelink relay enhancements LG Electronics France Work Plan Rel-18 NR\_SL\_relay\_enh-Core

* Noted

### 8.9.2 UE-to-UE relay

Single-hop Layer-2 and Layer-3 UE-to-UE relay for unicast. Focus for this meeting is on the common L2/L3 parts: relay discovery and (re)selection. Tdocs on other aspects of the objective may be submitted but will not be treated at this meeting.

[R2-2207126](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207126-Discovery%20and%20Relay%20selection%20for%20UE-to-UE%20relay.docx) Discovery and Relay (re-)selection for UE-to-UE relay Qualcomm Incorporated discussion NR\_SL\_relay\_enh-Core

Proposal 1: RAN2 confirm that the Scenario, Assumption and Requirement in section 5.1 of TR 38.836 apply for UE-to-UE relay support, with below clarifications:

- For cast type on UE-to-UE communication, only unicast is considered

- For cast type used for discovery message transmission, RAN2 should wait for SA2 progress and can do alignment work per SA2 request.

- For service continuity during mobility, RAN2 should wait for SA2 progress and can do alignment work per SA2 request.

Discussion:

Ericsson think we do not have a requirement for service continuity in UE-to-UE; they do not think SA2 have such an issue identified. They also think the coverage and RRC state aspects may need to be re-discussed, for example.

Apple also think service continuity is not included in the WID; we can do relay reselection but we are not tasked with service continuity.

Qualcomm indicate that the reason for bringing up service continuity is to handle any related cross-WG issues with SA2; they understand that SA2 are discussing related issues, e.g., minimising interruption time.

OPPO also think service continuity is not in scope. They think a unified model should be used for U2U and U2N discovery messages, but they also understand that SA2 are discussing this.

InterDigital understand that the discovery model may need to be revisited, e.g., if SA2 settle on combined discovery and connection establishment.

Agreement:

RAN2 confirm that the Scenario, Assumption and Requirement in section 5.1 of TR 38.836 apply for UE-to-UE relay support, with below clarifications:

- For cast type on UE-to-UE communication, only unicast is considered

- FFS if coverage and RRC state aspects need to be revisited in light of the existing U2N support.

- RAN2 will follow SA2 decision on the discovery model including cast type.

Proposal 2: U2U relay Discovery reuses the following mechanisms defined in Rel-17 for U2N relay.

- Reuse the U2N relay discovery protocol stack for U2U relay discovery

- Reuse SL-SRB4 for U2U relay discovery.

- U2U relay discovery configuration can be provided by SIB/dedicated message or pre-configured.

- Reuse the resource pools defined for Rel-17 U2N relay discovery.

- Support Resource allocation mode 1 or mode 2 based on in-coverage or out-of-coverage.

- Discovery message can be transmitted in any RRC state

Proposal 3: gNB will not configure the Uu threshold used by U2U Relay UE to determine whether to transmit Discovery message.

Discussion:

ZTE support P3, but the condition for transmission needs to be considered.

LG think it also applies to the remote UE.

InterDigital think there should be new conditions for transmission specific to U2U. Lenovo also think a new threshold might be needed.

vivo agree with P3 and support including the remote UE.

Xiaomi agree with the comments from InterDigital and Lenovo.

MediaTek wonder what the “discovery message” is in this description; we have a definition in Rel-17 for U2N but we do not know if we have a new discovery message for U2U or a unified message or something else.

Agreement:

gNB will not configure a Uu RSRP threshold to be used by U2U Relay or Remote UE to determine whether to transmit U2U discovery signalling. FFS what conditions would govern transmission of the discovery signalling.

Proposal 4: RAN2 should wait for SA2 progress on U2U Relay discovery higher layer mechanism and cast type.

Proposal 5: PC5 link quality (SD-RSRP) is the AS layer condition for U2U Remote UE to select a suitable U2U Relay UE.

Proposal 6: A threshold is configured by gNB or pre-configured to the U2U remote UE for U2U Relay selection evaluation. FFS whether to configure separate threshold with the one configured to U2N Relay selection.

Proposal 7: U2U Remote UE performs relay selection when receiving indication from upper layer.

Proposal 8: U2U Remote UE may trigger U2U Relay reselection under the following conditions:

- PC5 link quality towards the current U2U Relay UE is bellowed the (pre)configured threshold. FFS whether separate threshold with the one configured to U2N Relay reselection.

- U2U Remote UE is notified by the Relay UE the failure or release of PC5 link on the second hop.

- The current PC5 link is released due to e.g. RLF, release by upper layer, etc.

[R2-2207077](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207077%20Discussion%20on%20NR%20sidelink%20UE%20to%20UE%20relay_clean.docx) Discussion on NR sidelink UE-to-UE relay OPPO discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207182](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207182%20Discussion%20on%20U2U%20relay%20discovery%20and%20relay%20selection.docx) Discussion on U2U relay discovery and relay selection Xiaomi discussion

[R2-2207198](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207198%20Discussion%20on%20U2U%20relay%20discovery%20and%20(re)selection.docx) Discussion on U2U relay discovery and (re)selection ZTE discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207239](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207239_Discussion%20on%20SL%20Relay%20Discovery%20and%20(Re-)Selection.docx) Discussion on Sidelink U2U Relay Discovery and (Re-)Selection Fraunhofer IIS, Fraunhofer HHI discussion Rel-18 NR\_SL\_relay\_enh, NR\_SL\_relay\_enh-Core

[R2-2207252](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207252%20-%20Design%20aspects%20of%20relay%20selection%20and%20reselection%20for%20U2U%20relay.docx) Design aspects of relay selection and reselection for U2U relay Ericsson discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207278](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207278_U2U_Relaying_Discovery_Reselection_Intel.docx) Discovery and reselection with UE-to-UE relaying Intel Corporation discussion Rel-18 NR\_SL\_relay-Core

[R2-2207336](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207336%20Basic%20aspects%20for%20U2U%20Relay%20work.docx) Basic aspects for U2U Relay work Lenovo discussion NR\_SL\_relay\_enh-Core Late

[R2-2207457](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207457%20Discussion%20on%20relay%20discovery%20and%20relay%20selection%20for%20U2U%20relay.doc) Discussion on U2U Relay Discovery and Relay (Re)-selection Apple discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207520](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207520_Disussion%20on%20U2U%20relay%20discovery%20and%20(re-)selection.docx) Discussion on U2U Relay Discovery and (Re)selection CATT discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207644](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207644+Discussion%20on%20mechanisms%20to%20support%20UE-to-UE%20relay.doc) Discussion on mechanisms to support UE-to-UE relay China Telecom discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207653](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207653-Consideration%20for%20UE-to-UE%20relay%20operation.docx) Consideration for UE-to-UE relay operation LG Electronics France discussion Rel-18

[R2-2207686](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207686.doc) Discussion on relay discovery and (re)selection for U2U relay Spreadtrum Communications discussion Rel-18

[R2-2207729](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207729%20Overall%20view%20on%20U2U%20sidelink%20relay_final.doc) Overall views on U2U sidelink relay Samsung R&D Institute UK discussion

[R2-2207838](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207838.doc) UE-to-UE relay cell reselection and Relay UE DRX Sony discussion Rel-18 NR\_SL\_relay\_enh

[R2-2207860](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207860_U2U_relay_scenario.doc) Scenarios that require UE-to-UE relay (re)selection Sharp discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207861](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207861_U2U_relay_discussion.doc) UE-to-UE relay discovery and (re)selection Sharp discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208005](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208005%20-%20L2%20and%20L3%20U2U%20relays.docx) Clarifications on the scope of SL based U2U Relay Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208041](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208041_U2U_discovery.doc) Initial considerations for U2U relay discovery and (re)selection Kyocera discussion

[R2-2208083](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208083_Discussion%20on%20L2%20and%20L3%20U2U%20relay.docx) Discussion on L2 and L3 U2U relay vivo discussion

[R2-2208151](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208151%20(R18%20SL%20Relay%20WI_AI892%20RelayDiscoverySelection).doc) Discovery and Relay Selection for UE-to-UE Relays InterDigital discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208427](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208427%20Consideration%20on%20U2U%20relay.docx) Consideration on U2U relay CMCC discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208489](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208489%20Discussion%20on%20UE-to-UE%20relay.doc) Discussion on UE-to-UE relay Huawei, HiSilicon discussion Rel-18 NR\_SL\_relay\_enh-Core

Contributions on L2-specific topics (will not be treated at this meeting).

[R2-2207170](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207170%20Connection%20management%20and%20procedures%20for%20L2%20UE-to-UE%20relay.docx) Connection management and procedures for L2 UE-to-UE relay MediaTek Inc. discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208039](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208039_U2U_CP.docx) Initial considerations for U2U L2 relay CP operations Kyocera discussion

### 8.9.3 Service continuity enhancements for L2 UE-to-network relay

Inter-gNB direct/indirect path switching; intra-gNB indirect/indirect path switching; and inter-gNB indirect/indirect path switching, to be supported by reuse of solutions for the other scenarios.

[R2-2207220](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207220_Service%20continuity%20for%20L2%20U2N%20relays.docx) Service Continuity Enhancements for Layer-2 UE-to-Network Relays Ericsson España S.A. discussion Rel-18

Proposal 1 For inter-gNB path switching in Rel-18, the gNB can select a target U2N relay UE in any RRC state, i.e., RRC\_CONNECTED/IDLE/INACTIVE following the path switch scenario agreed in Rel-17.

Discussion:

Xiaomi agree with the proposal but think the “i.e.” part may not be needed, since the Rel-17 functionality may be enhanced.

Apple agree with the proposal in principle but have a concern that it is not clear, in that it doesn’t mention whether the selection is by the source or target gNB. They suggest we add an FFS on how the gNB considers the RRC state in relay UE selection.

vivo think on Apple’s concern, we can reword “the gNB” to “the network” to avoid the ambiguity. They wonder if P1 also includes the intra-gNB i2i case; they think it should be covered. Ericsson agree we could include this case.

Lenovo are also fine with P1 and agree with vivo’s comment.

Kyocera think it should be up to the gNB to decide the target relay state, i.e., the gNB may take the state into account in selecting a target.

Huawei think we do not need to list all the scenarios, and they wonder if we need to discuss how the relay UE would be triggered to enter RRC\_CONNECTED (P3).

Proposal 2 For the target U2N relay UE in RRC\_CONNECTED state, the Rel-17 procedures for intra-gNB path switching are used as a baseline for inter-gNB path switching with the addition of inter-gNB signaling over the Xn interface. The details of the Xn signaling are upto RAN3.

Discussion:

OPPO think the i2i case is missing and think a similar principle can be applied to the inter-gNB i2i case, maybe with an FFS on applicability to i2i (since there is no Rel-17 i2i baseline). They agree with the intention of the proposal.

vivo are fine with the first sentence but think we cannot leave all the signalling details to RAN3; the RRC INMs need to be considered.

Apple are fine with vivo’s suggestion, but they think the proposal need not be restricted to RRC\_CONNECTED.

NEC share the same view as vivo and think we could add an FFS on the Xn signalling and which gNB selects the target relay UE.

Intel also agree with vivo and think that RAN2 will discuss if the relay UE in idle should be included, which may have Xn implications compared to legacy handover.

LG think we first need to identify which parameters need to be exchanged between the gNBs and where there would be INM vs. XnAP impact. They think RAN2 can decide which parameters need to be exchanged, and we need to avoid duplicated information from RAN2 and RAN3 decisions.

MediaTek think this is not a very efficient discussion of principle and we should focus on technical discussion.

Proposal 3 The Rel-17 remote UE oriented solution to trigger the target U2N relay UE to the CONNECTED state should also be applicable to the Rel-18 inter/intra-gNB scenarios.

Discussion:

vivo agree with P3. Huawei also support it. Also NEC, LG, Intel.

OPPO generally agree with this proposal but think there might be a gap, because in Rel-17 we assume that the HO confirm message will always come via SRB1 through the relay UE, and in the Rel-18 multi-path case it might come directly.

MediaTek would like some more time to think on P3; they think this was a significant discussion in Rel-17 and we could see if there are further aspects that need to be considered.

Nokia wonder if we are excluding any other mechanism; they think a baseline is OK but we should be clear if we are excluding other options. Apple support Nokia’s point and would like more time to think about other solutions.

Ericsson think we should not mix the multi-path objective with the service continuity objective. Qualcomm have the same concern.

LG think multi-path cases need to be separately discussed.

Samsung have some concern about the baseline; they understand that in Rel-17 we also allow paging from the target gNB to the relay UE as an alternative.

Ericsson understand that we had an explicit agreement in Rel-17 that we use the remote UE to trigger the relay UE to move to RRC\_CONNECTED. Samsung understand that this is not the only option.

CATT think the paging solution in Rel-17 is not related to the path switch, only to the fact that if the network pages the relay UE beforehand it will no longer be in idle/inactive.

InterDigital think we could send an LS to RAN3. Ericsson think we have not made any agreement where an LS is necessary. Apple and NEC also think it is too early.

Agreements:

For inter-gNB d2i path switching and intra-/inter-gNB i2i path switching in Rel-18, the network can select a target U2N relay UE in any RRC state, i.e., RRC\_CONNECTED/IDLE/INACTIVE.

For the target U2N relay UE in any RRC state, the Rel-17 procedures for intra-gNB d2i path switching are used as a baseline for inter-gNB d2i path switching with the addition of inter-gNB signaling over the Xn interface.

The Rel-17 remote UE oriented solution to trigger the target U2N relay UE to the CONNECTED state should also be applicable to the Rel-18 inter/intra-gNB scenarios as a baseline for single-path relay. Other mechanisms are not excluded if an issue is found with the baseline.

Proposal 4 New measurement report triggering events are to be supported for the indirect-to-indirect path switch scenario based on the Events X and Y.

Discussion:

Qualcomm think we can just agree that new events are introduced, without the comparison to events X and Y. Lenovo agree. OPPO prefer the formulation in R2-2208082.

Proposal 5 In an inter-gNB path switch procedure, based on the preselected candidate U2N relays UEs by the source gNB, the target gNB is to decide on the target U2N relay UE. The Xn signaling details are pending on RAN3.

Discussion:

InterDigital think we should discuss both cases.

Huawei think the legacy principle should be followed, in which the source gNB chooses the target. However, they note that RAN3 have discussed this and there may be a work split issue.

[R2-2208082](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208082_On%20service%20continuity%20enhancement%20for%20L2%20U2N%20relay.docx) On service continuity enhancement for L2 U2N relay vivo discussion

Proposal 1: Reuse the Rel-17 sl-PathSwitchConfig and related direct-to-indirect procedure as the baseline to support intra-gNB indirect-to-indirect path switch.

Proposal 2: When indirect-to-indirect path switch is initiated, the Remote UE can release the PC5 RRC connection with the source relay UE. The timing to execute link release is up to UE implementation.

Discussion:

vivo clarify that this just follows the i2d case in Rel-17.

Proposal 3: RAN2 discusses whether to introduce new measurement event that considers both the link quality with the serving Relay UE and that with candidate Relay UE for the indirect-to-indirect path switch purpose.

Discussion:

Xiaomi think this is clearly necessary, and regarding the two possible event types, they think both are needed.

Apple think the current X1/Y1 events are A5-like, and we could have an “A5-like” event and leave an “A3-like” event FFS.

vivo did not intend to propose a specific alternative for this event; they think this is a stage 3 detail.

MediaTek think the comparison between the serving and candidate relay UEs may also be applied to comparison with a cell quality, e.g., for deciding between i2i and i2d cases.

vivo intended that we will introduce the event for i2i, which does not exclude comparison with a direct link for the other cases.

Proposal 4: For the signalling and procedures in Uu, reuse those of intra-gNB direct-to-indirect path switch, intra-gNB indirect-to-direct path switch and intra-gNB indirect-to-indirect path switch (as in above P1-3) as the baseline for the corresponding inter-gNB cases, respectively.

Discussion:

Apple wonder if this duplicates the earlier agreement above.

vivo indicate that the intention was to keep the Uu/PC5 behaviour, and of course the INM/Xn behaviour may be different.

Proposal 5: The S-gNB signals the measurements result of the candidate cell(s) and/or candidate Relay UE(s) to the T-gNB. The T-gNB decides whether to switch the Remote UE to the indirect path or direct path, and signals the selected target Relay UE/target cell to the S-gNB to follow.

Agreements:

When indirect-to-indirect path switch is initiated, the Remote UE can inform upper layers to release the PC5 unicast link with the source relay UE. The timing to execute link release is up to UE implementation.

Introduce a new measurement event that considers both the PC5 link quality with the serving Relay UE and that with candidate Relay UE for the indirect-to-indirect path switch purpose. FFS if there would be more than one event type.

For the signalling and procedures in Uu and PC5, intra-gNB indirect-to-direct path switch is used as the baseline for inter-gNB i2d path switch.

[R2-2207078](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207078%20Discussion%20on%20further%20enhancement%20of%20service%20continuity_clean.docx) Discussion on further enhancement of U2N service continuity OPPO discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207133](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207133-Service%20continuity%20for%20UE-to-Network%20relay-r1.docx) Service continuity for UE-to-Network relay Qualcomm Incorporated discussion NR\_SL\_relay\_enh-Core

[R2-2207169](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207169%20Service%20Continuity%20Enhancement%20for%20Sidelink%20Relay.docx) Service Continuity Enhancement for Sidelink Relay MediaTek Inc. discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207181](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207181%20Discussion%20on%20service%20continuity%20enhancement.docx) Discussion on service continuity enhancement Xiaomi discussion

[R2-2207199](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207199%20Discussion%20on%20the%20service%20continuity%20enhancement%20for%20SL%20relay.doc) Discussion on Service continuity enhancement for U2N relay ZTE discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207279](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207279_Service%20continuity%20enhancements%20for%20L2%20U2N%20relaying.docx) Service continuity enhancements for L2 U2N relaying Intel Corporation discussion Rel-18 NR\_SL\_relay-Core

[R2-2207420](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207420%20-%20Discussion%20on%20service%20continuity%20enhancement%20of%20L2%20U2N%20relay.doc) Discussion on Service continuity enhancement of L2 U2N relay Apple discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207521](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207521%20Service%20Continuity%20Enhancements%20for%20L2%20U2N%20Relay.docx) Service Continuity Enhancements for L2 U2N Relay CATT discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207642](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207642%20Discussion%20on%20service%20continuity%20enhancements%20for%20L2%20U2N%20relay.docx) Discussion on service continuity enhancements for L2 U2N relay China Telecom discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207652](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207652%20Service%20continuity%20enhancements%20for%20L2%20U2N%20relay.docx) Service continuity enhancements for L2 U2N relay LG Electronics France discussion Rel-18

[R2-2207687](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207687%20Service%20continuity%20enhancements%20support%20for%20L2%20U2N%20relay.doc) Service continuity enhancements support for L2 U2N relay Spreadtrum Communications discussion Rel-18

[R2-2207700](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207700_Discussion%20on%20Service%20continuity%20in%20U2N%20relay%20case%20v1.1.docx) Discussion on Service continuity in U2N relay case Lenovo discussion Rel-18

[R2-2207839](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207839.doc) Service continuity enhancements for UE sidelink relay Sony discussion Rel-18 NR\_SL\_relay\_enh

[R2-2207963](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207963%20Considerations%20on%20Service%20Continuity%20Enhancement.docx) Considerations on Service Continuity Enhancement NEC Corporation discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208006](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208006%20Draft%20L2%20U2N%20relay%20service%20continuity%20enhancement.docx) Discussion on service continuity enhancement for L2 U2N relay Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208158](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208158%20U2N%20Relay%20UE%20operation%20Threshold%20Conditions%20-%20Impact%20of%20UE%20Mobility%20Final.doc) U2N Relay UE operation Threshold Conditions: Impact of UE Mobility Philips International B.V. discussion Rel-18 NR\_SL\_relay\_enh-Core R2-2109823

[R2-2208229](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208229%20Discussion%20on%20service%20continuity.docx) Discussion on Service Continuity Huawei, HiSilicon discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208260](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208260%20Service%20continuity%20enhancement%20for%20L2%20U2N%20relay_r2.doc) Service continuity enhancement for L2 U2N relay Samsung discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208428](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208428%20Service%20continuity%20for%20U2N%20relay.docx) Service continuity on U2N relay CMCC discussion Rel-18 NR\_SL\_relay\_enh-Core

### 8.9.4 Multi-path relaying

Study the benefit and potential solutions for multi-path support to enhance reliability and throughput. Includes the cases where a UE is connected to the same gNB using one direct path and one indirect path via 1) Layer-2 UE-to-Network relay, or 2) via another UE (where the UE-UE inter-connection is assumed to be ideal).

[R2-2208349](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208349%20Multi-path%20relaying%20for%20NR%20sidelink%20relay%20enhancements.doc) Multi-path relaying for NR sidelink relay enhancements LG Electronics France discussion Rel-18 NR\_SL\_relay\_enh-Core

Proposal 1: Multi-path relaying can offer the following benefits:

A. The relay UE in proximity may provide better Uu link quality than the remote UE e.g. for delay-insensitive traffic.

B. Multi-path relaying can provide efficient path switching between direct path and indirect path without RRC reconfiguration, i.e. path reselection can be achieved with low RRC signalling overhead and low delay.

C. The remote UE already having a PC5 unicast link with the relay UE (e.g. due to V2X communication) can provide enhanced user data throughput without simultaneous support of CA/DC capability and sidelink capability in the band combination.

D. gNB can offload the direct connection of the remote UE in congestion to indirect connection via the relay UE (e.g. at different intra/inter-frequency cells) or vice versa while keeping delay-sensitive traffic on the direct connection.

Discussion:

OPPO tend to agree that these benefits are valid, but on the other hand think some of them are already there in Rel-17 (e.g. bullet A). They see bullets B and D as more valid for multi-path, and C could be updated to clarify that the links are separate and therefore the additional link establishment would be required.

Xiaomi also think there is benefit, but the detailed solution may need further discussion. They see an assumption in bullet B (“without RRC reconfiguration”) that seems solution-dependent. Also, they think the mention of delay-sensitive traffic in A and D is a network limitation.

vivo think we don’t have to spend too much discussion on this and companies acknowledge that we have benefits.

InterDigital are also generally accepting of capturing the benefits in a bit more general way. On D, they think this applies for multi-path, and in general they think all of them apply to multi-path, as opposed to Rel-17 which is more about a UE out of coverage.

Agreement:

RAN2 anticipate benefits from multi-path in the following areas:

1. Relay and direct multi-path operation (including both scenarios 1 and 2) can provide efficient path switching between direct path and indirect path
2. The remote UE in multi-path operation can provide enhanced user data throughput and reliability compared to a single link
3. gNB can offload the direct connection of the remote UE in congestion to indirect connection via the relay UE (e.g. at different intra/inter-frequency cells)

Proposal 2: Support the following cell deployment scenarios for multi-path relaying in Rel-18:

- Scenario C1: The relay UE and remote UE are served by a same cell.

- Scenario C2: The relay UE and remote UE are served by different intra-frequency cells of a same gNB

- Scenario C3: The relay UE and remote UE are served by different inter-frequency cells of a same gNB

Proposal 3: Support the following sidelink scenarios for multi-path:

- Scenario S1: SL TX/RX and Uu share the same carrier at the remote UE.

- Scenario S2: SL TX/RX and Uu use different carriers at the remote UE.

- Scenario S3: SL TX/RX and Uu share the same carrier at the relay UE.

- Scenario S4: SL TX/RX and Uu use different carriers at the relay UE.

Discussion:

OPPO think on P3, SL has no relationship with DL because the resources are always for UL.

vivo understand that these proposals are specific to scenario 1. Chair understands this is correct for P3 but P2 can be agnostic.

CMCC would like to clarify that we can consider changing the terms for scenario 2 in the future. Chair understands that we could revisit terminology.

Nokia wonder if P2 is specific to the L2 architecture. Chair understands it includes scenario 2 but not L3.

Agreements:

The terms “relay UE” and “remote UE” are used for scenarios 1 and 2. FFS if we would use additional terms specific to scenario 2.

Proposal 2: Support the following cell deployment scenarios for multi-path relaying in Rel-18:

- Scenario C1: The relay UE and remote UE are served by a same cell.

- Scenario C2: The relay UE and remote UE are served by different intra-frequency cells of a same gNB

- Scenario C3: The relay UE and remote UE are served by different inter-frequency cells of a same gNB

Proposal 3: Support the following sidelink scenarios for multi-path:

- Scenario S1: SL TX/RX and Uu share the same carrier at the remote UE.

- Scenario S2: SL TX/RX and Uu use different carriers at the remote UE.

- Scenario S3: SL TX/RX and Uu share the same carrier at the relay UE.

- Scenario S4: SL TX/RX and Uu use different carriers at the relay UE.

Proposal 4: Support multi-path operation of configuring both indirect path via one L2 U2N Relay UE and direct path for the same gNB.

Proposal 5: Support direct bearer, indirect bearer, and MP split bearer which uses both direct and indirect path based on the existing split bearer framework.

Proposal 6: For a MP split bearer, one PDCP entity is configured with one direct RLC channel and one indirect RLC channel.

- For upstream, a UL TX PDCP entity is configured with a UL TX RLC entity and a SL TX RLC entity with SRAP entity in the remote UE side.

- For downstream, a DL RX PDCP entity can be configured with a DL RX RLC entity and a SL RX RLC entity with SRAP entity in the remote UE side.

Discussion:

OPPO think there are several terms in P5 that are not defined. They also note that P6 is a bit unclear about Uu vs. PC5 RLC, and today we do not differentiate between UL and DL entities.

MediaTek have a terminology concern: Currently the term is “multi-path relay” (e.g. in the agreements above on benefits), which they think is not correct since there is no relay on the direct path.

CMCC agree with MediaTek and think we could just speak of “multi-path”, as they do not see a “relay” function in scenario 2. On P6, they agree in principle, but they think for scenario 2 we should leave the use of SRAP open. vivo agree with CMCC.

Ericsson think P5 can be more clearly worded. For P6, they understand that when we talk about PDCP mapping to the RLC entity, there is some confusion as PDCP is e2e but RLC is hop-by-hop.

Huawei are OK with the current wording of the agreements in general, but for P6, they think we should not speak of separate configuration for UL and DL.

Agreements:

Support direct bearer (bearer mapped to direct path on Uu), indirect bearer (bearer mapped to indirect path via relay UE), and MP split bearer (bearer mapped to both paths, based on the existing split bearer framework).

For a MP split bearer in scenario 1, one PDCP entity at the remote UE is configured with one direct Uu RLC channel and one indirect PC5 RLC channel.

- For upstream, a PDCP entity delivers to a Uu RLC entity and a PC5 RLC entity with SRAP entity in the remote UE side.

- For downstream, a PDCP entity receives from a Uu RLC entity and a PC5 RLC entity with SRAP entity in the remote UE side.

FFS if we need to take decisions on the mapping of protocol entities in scenario 2.

Proposal 7: Multi-path relaying can be configured by:

• configuring direct/split bearers in case that indirect bearers has been already established; or

• configuring indirect/split bearers in case that direct bearers has been already established; or

• simultaneously configuring different types of bearers i.e. direct/indirect/split bearers

Proposal 8: Support PDCP duplication over direct path and indirect path

Proposal 9: Support SL mode 1 for the remote UE configured with multi-path relaying.

Proposal 10: The SRAP layer is used for indirect path via Layer-2 UE-to-Network relay (i.e. Scenario 1) as specified in Rel-17. FFS whether the SRAP layer can be also used for indirect path based on Scenario 2.

Proposal 11: Pursue commonality between scenario 1 and scenario 2 and identify potential different aspects between scenario 1 and scenario 2 and any specification impact during the study.

[R2-2207015](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207015%20-%20Discussion%20on%20multi-path%20Relay_V0.2.docx) Discussion on multi-path SL relay OPPO discussion Rel-18 NR\_SL\_relay\_enh-Core

Proposal 1 For Scenario-1 of multi-path relay, allow the deployment scenario where the frequency used for PC5 between remote and relay UE, for Uu between remote UE and gNB, and for Uu between relay UE and gNB, are the same or different.

Proposal 2 For scenario-1 of multi-path relay, R2 does not pursue applying multi-path relay to the procedures of SIB delivery, paging delivery, RRC setup / resume and re-establishment.

Proposal 3 For scenario-1 of multi-path Relay, R2 focus on the application of multi-path relay to RRC\_CONNECTED UEs only, i.e., after RRC setup / resume / re-establishment procedure.

Discussion:

Qualcomm understand the intention of P2/P3, but think that the remote UE still needs to receive SI and paging, perform re-establishment, etc. They think we could introduce “primary path” terminology and specify that these procedures happen only on the primary path.

Xiaomi think on P2, we should not exclude multi-path operation for SI and paging, but excluding setup/resume/re-establishment is OK.

Ericsson have a similar understanding to Xiaomi. If both paths connect to different cells, the SI and paging may be needed.

Nokia have a similar view on SI and paging, and for resume/re-establishment, they think it is early to agree without seeing the solutions. They point out that reliability is part of the objectives.

OPPO intended with P2 that we would not do additional work compared to what is supported in Rel-17.

InterDigital have a concern on P3 and think it is a bit early to conclude without discussing how the multi-path configuration is maintained.

Proposal 4 For Scenario-1 of multi-path relay, R2 studies the solution relying on PDCP layer to aggregate the two paths.

Proposal 5 For scenario-1 of multi-path relay, R2 studies the solution where the usage of single-path (via direct or via indirect path) and multi-path (via both direct and indirect) is configured in a per-bearer manner.

Proposal 6 For Scenario-1 of multi-path relay, R2 de-prioritizes the multi-path-to-multi-path change.

Proposal 7 For Scenario-1 of multi-path Relay, R2 discusses whether to cover cases of 1b (direct path is changed, indirect path is added), 2b (indirect path is changed, direct path is added), 3b (direct path is changed, indirect path is released) and 4b (indirect path is changed, direct path is released).

Proposal 8 For Scenario-1 of multi-path Relay, for case-1a (direct path is kept, indirect path is added) and 3a (direct path is kept, indirect path is released), support indirect path addition / release (i.e., establish/release PC5 SRAP/RLC/MAC/PHY) without releasing direct path.

Proposal 9 For Scenario-1 of multi-path Relay, for case-2a (indirect path is kept, direct path is added) and 4a (indirect path is kept, direct path is released), support direct path addition / release (i.e., establish/release Uu RLC/MAC/PHY) without releasing indirect path.

Proposal 10 For Scenario-1 of multi-path Relay, RAN2 discusses to support the SP-from/to-MP change without and with PCell change by reusing ReconfigurationWithSync signaling.

Proposal 11 For Scenario-1 of multi-path Relay, RAN2 not purse the concept of primary / secondary path / bearer before the motivation / definition is clarified.

Proposal 12 For Scenario-2 of multi-path relay, allow the deployment scenario where the frequency used for Uu between remote UE and gNB, and for Uu between relay UE and gNB, are same or different.

Proposal 13 For scenario-2 of multi-path relay, R2 does not pursue applying multi-path relay to the procedures of SIB delivery, paging delivery, RRC setup / resume and re-establishment.

Proposal 14 For scenario-2 of multi-path Relay, R2 focus on the application of multi-path relay to RRC\_CONNCTED UEs only, i.e., after RRC setup / resume / re-establishment procedure.

Proposal 15 For scenario-2 of multi-path Relay, reuse the same stack as for scenario-1, i.e., SRAP on top of inter-UE connection to carry data from PDCP and above layers.

Proposal 16 For Scenario-2 of multi-path relay, R2 studies the solution relying on PDCP layer to aggregate the two paths.

Proposal 17 For scenario-2 of multi-path relay, R2 studies the solution where the usage of single-path (via direct or via indirect path) and multi-path (via both direct and indirect) is configured in a per-bearer manner.

Proposal 18 For Scenario-2 of multi-path relay, R2 de-prioritizes the multi-path-to-multi-path change.

Proposal 19 For Scenario-2 of multi-path Relay, R2 discusses whether to cover cases of 1b (direct path is changed, indirect path is added), and 3b (direct path is changed, indirect path is released).

Proposal 20 For Scenario-2 of multi-path relay, R2 does not pursue the case of single path via indirect connection, i.e., the single-path, if used, has to be on direct connection.

Proposal 21 For Scenario-2 of multi-path Relay, to support the case-1a (direct path is kept, indirect path is added) and 3a (direct path is kept, indirect path is released), support indirect path addition / release (i.e., establish/release PC5 SRAP) without releasing direct path. The configuration of non-3GPP lower layer is left to UE implementation.

Proposal 22 For Scenario-2 of multi-path Relay, only support the SP-from/to-MP change without PCell change.

Proposal 23 For Scenario-2 of multi-path Relay, RAN2 not purse the concept of primary / secondary path / bearer before the motivation / definition is clarified.

P1/P2/P6

[R2-2208429](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208429%20Multi-path%20and%20UE%20aggregation.docx) Multi-path and UE aggregation CMCC discussion Rel-18 NR\_SL\_relay\_enh-Core

Proposal 1: RAN2 can confirm the justifiable benefits that multi-path with relay and UE aggregation can improve the throughput and reliability/robustness for UE at the edge of a cell, and UE with limited UL transmission power.

Discussion:

ZTE are fine with P1 but want to emphasise that if we consider the cell edge scenario, the UE may start with the indirect path, so they think this scenario should be allowed.

Ericsson think the UE transmission power point is not identified in the WID. Chair understands the proposal relates to a case where the throughput and reliability benefits are available.

InterDigital agree with the proposal and with the chair’s statement.

Apple think the edge of cell case is covered by the earlier agreement, so the difference is just the UL transmit power case.

CMCC think the UE at cell edge has challenges with uplink throughput, and they see this as an issue for real networks.

Agreement:

RAN2 can confirm the justifiable benefits that multi-path with relay and UE aggregation can improve the throughput and reliability/robustness, e.g., for UE at the edge of a cell, and UE with limited UL transmission power.

Proposal 2: For SI phase, RAN2 should reach consensus on the scope of Work Item, which includes the issues list and priority, and inform other work group if any impacts.

 Study the protocol stack to support UE with one gNB, where PDCP or PDCP-sub is operating in one of the UEs (and the gNB)；(high)

 Link establishment procedure (e.g. Setup/Modification/Release) for control of the (multi link) Radio Bearer for the aggregated UEs and Relay UE/Remote UEs; (high)

 Authorization and association mechanism

 Phase 1: Just considering the relationship between anchor UE and aggregated UE is relative static and can be pre-configured (high)

 Phase 2: Study some other cases, that is, the UE reports the association with other UEs to network, or the network (RAN or CN) may configure the association amongst UEs, where the SA2/CT1 work is possible to be involved. (low)

 Coordinated mobility for the aggregated UEs and Relay UEs; (low)

Discussion:

Chair asks specifically about the bullets on the association mechanism.

OPPO think it is difficult to conclude on this in limited time, and they think we cannot draw any immediate conclusion on the priority.

Qualcomm think for the UE aggregation scenario, we should reuse the scenario 1 mechanisms as much as possible, and identify which ones cannot be reused.

Proposal 6: RAN2 should down select one UP protocol stack for UE aggregation from DAPS-like and DC-like, without consideration on the introduction of SRAP for UE aggregation.

* [AT119-e][427][Relay] Handling of scenarios 1 and 2 (LG)

Scope: Discuss the relation of scenarios 1 and 2 (including organisation/prioritisation of work and P2 of R2-2208429).

Intended outcome: Report to CB session in R2-2208809

Deadline: Tuesday 2022-08-23 1200 UTC

[R2-2208809](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208809%20-%20Summary%20of%20%5b429%5d_V24_Rapp.doc) [AT119-e][427][Relay] Handling of scenarios 1 and 2 (LG) LG Electronics France discussion Rel-18 NR\_SL\_relay\_enh-Core

Considering majority’s views:

Proposal 1: It is proposed to agree confirm the remote UE in Scenario 1 and the remote UE in Scenario 2 as follows:

- Scenario 1: the remote UE is connected to the same gNB using one direct path and one indirect path via 1) Layer-2 UE-to-Network relay,

- Scenario 2: the remote UE is connected to the same gNB using one direct path and one indirect path via 2) via another UE (where the UE-UE inter-connection is assumed to be ideal).

Proposal 2: RAN2 should pursue commonality between scenario 1 and scenario 2.

- Rapporteur thinks that RAN2 can further discuss which part of solutions of scenario 1 is unnecessary for scenario 2. This discussion seems eventually related with proposal 4.

Proposal 7: RAN2 assumes that the relation between remote UE and relay UE in scenario 2 is pre-configured or static and how the relation is pre-configured or static is out of the 3GPP scope.

- Rapporteur thinks that RAN2 could further discuss whether RAN2 needs to inform SA2 about this assumption.

Proposal 8: RAN2 deprioritizes discussion on authorization and association mechanism between remote UE and relay UE in scenario 2.

- Rapporteur thinks that RAN2 could further discuss whether gNB can be informed about the pre-configured/static relation during WI phase, if scenario 2 is supported.

Discussion:

LG clarify that there is a “majority view” block of proposals that may be agreeable.

CMCC think on P2, we need to identify the difference as well as the commonality. They understand that the intention of the plenary was to allow RAN2 to design complete solutions for both cases, with as much commonality as possible. LG think this relates to P4.

CMCC suggest we identify the differences as well as pursuing commonalities, as a compromise.

ZTE have sympathy with CMCC and think scenarios 1 and 2 should be treated equally, so they would like to take P4.

Intel are OK in principle with P4 but would like to add that scenario 1 should be considered first, and once the baseline of scenario 1 is in place we look into the differences.

MediaTek agree with Intel and think we need to prioritise scenario 1 considering the time limit.

InterDigital think we should keep the original P2, which had majority support in the email discussion.

vivo think we should guarantee that scenario 2 is completed.

Ericsson think the FFS on differences is not needed.

Proposal 4: RAN2 will identify potential different aspects between scenario 1 and scenario 2 during the study

Agreements:

Proposal 1: It is proposed to agree confirm the remote UE in Scenario 1 and the remote UE in Scenario 2 as follows:

- Scenario 1: the remote UE is connected to the same gNB using one direct path and one indirect path via 1) Layer-2 UE-to-Network relay,

- Scenario 2: the remote UE is connected to the same gNB using one direct path and one indirect path via 2) via another UE (where the UE-UE inter-connection is assumed to be ideal).

RAN2 assumes that the relation between remote UE and relay UE in scenario 2 is pre-configured or static and how the relation is pre-configured or static is out of the 3GPP scope.

RAN2 deprioritizes discussion on authorization and association mechanism between remote UE and relay UE in scenario 2.

[R2-2207137](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207137-Initial%20discussion%20on%20multi-path%20operation%20for%20UE-to-Network%20relay-r2.docx) Initial discussion on multi-path operation for UE-to-Network relay Qualcomm Incorporated discussion NR\_SL\_relay\_enh-Core

[R2-2207180](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207180%20Discussion%20on%20multi-path.docx) Discussion on multi-path Xiaomi discussion

[R2-2207187](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207187%20Initial%20consideration%20on%20multi-path%20relaying.docx) Initial consideration on the multi-path relaying ZTE, Sanechips discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207221](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207221_Multipath%20support%20with%20direct%20path%20and%20indirect%20path.docx) Multipath Support with Direct path and Indirect path Ericsson España S.A. discussion Rel-18

[R2-2207280](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207280_Discussion%20on%20Multi-path%20Relaying_Intel.docx) Discussion on Multi-path Relaying Intel Corporation discussion Rel-18 NR\_SL\_relay-Core

[R2-2207361](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207361%20Multipath%20support%20for%20remote%20UE%20v02.docx) Multipath support for remote UE MediaTek Beijing Inc. discussion Rel-18

[R2-2207458](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207458%20Discussion%20on%20multi-path%20support.doc) Discussion on multi-path support Apple discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207522](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207522_Discussion%20on%20Multi-path.docx) Discussion on Multi-path CATT discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207643](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207643%20Discussion%20on%20multi-path%20support%20to%20enhance%20reliability%20and%20throughput.docx) Discussion on multi-path support to enhance reliability and throughput China Telecom discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207688](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207688%20Discussion%20on%20multi-path%20relaying.doc) Discussion on multi-path relaying Spreadtrum Communications discussion Rel-18

[R2-2207701](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207701.docx) Discussion on Multi-path relaying Lenovo discussion Rel-18

[R2-2207840](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207840.doc) Multi-path relaying discussion Sony discussion Rel-18 NR\_SL\_relay\_enh

[R2-2207847](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207847_SLRelay_Multipath_v1.doc) Discussion on multipath for sidelink relay enhancement Samsung discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207862](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207862_multi-path_relay.doc) benefit of multi-path relay Sharp discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2207964](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207964%20Considerations%20on%20Multipath%20of%20Sidelink%20Relay.docx) Considerations on Multipath of Sidelink Relay NEC Corporation discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208081](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208081_%20Multi-path%20UE%20aggregation%20on%20PC5%20and%20Ideal-link.docx) Multi-path UE aggregation on PC5 and Ideal-link vivo discussion

[R2-2208152](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208152%20(R18%20SL%20Relay%20WI_AI894%20MultipathArchitecture).doc) Scenarios, Use Cases, and Protocol Architecture for Multi-path InterDigital discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208153](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208153%20(R18%20SL%20Relay%20WI_AI894%20MultipathAspects).doc) Design Aspects for Multi-path InterDigital discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208154](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208154%20Considerations%20on%20reliability%20and%20throughput%20for%20multi-path.docx) Considerations on reliability and throughput for multi-path Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2208488](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208488%20Discussion%20on%20Rel-18%20multi-path%20via%20SL%20relay%20and%20UE%20aggregation.docx) Discussion on Rel-18 multi-path via SL relay and UE aggregation Huawei, HiSilicon discussion Rel-18 NR\_SL\_relay\_enh-Core

## 8.15 R18 Other

Misc Impacts from Other RAN WGs and TSGs (incl MC Enhancements). LS ins for Rel-18 topics that has no RAN WI.

Time budget: 0.5 TU

Tdoc Limitation: -

[R2-2207167](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207167%20CR%20on%2038331%20for%20SFN-DFN%20offset%20and%20PosSIB%20request.docx) CR on 38331 for SFN-DFN offset and PosSIB request MediaTek Inc. CR Rel-17 38.331 17.1.0 3226 - B TEI18

* Withdrawn

[R2-2207168](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207168%20Positioning%20support%20for%20remote%20UEs.docx) Positioning support for remote UEs MediaTek Inc. discussion Rel-18 TEI18

* Withdrawn

[R2-2207287](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207287.docx) Positioning support for remote UEs MediaTek Inc., CATT discussion Rel-18 TEI18 Revised

* Revised in R2-2208314

[R2-2207288](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207288.docx) Downlink positioning support and posSIB request for L2 UE-to-network remote UE MediaTek Inc., CATT CR Rel-18 38.331 17.1.0 3245 - C TEI18 Revised

* Revised in R2-2208315

[R2-2207289](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207289.docx) Indication to LMF of operation as a L2 UE-to-network remote UE MediaTek Inc., CATT CR Rel-18 37.355 17.1.0 0357 - C TEI18 Revised

* Revised in R2-2208317

[R2-2207290](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2207290.docx) Positioning method support for L2 UE-to-network remote UE MediaTek Inc., CATT CR Rel-18 38.305 17.1.0 0104 - C TEI18 Revised

* Revised in R2-2208319

[R2-2208314](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208314.docx) Positioning support for remote UEs MediaTek Inc., CATT, Huawei, HiSilicon discussion Rel-18 TEI18 R2-2207287

* Postponed

[R2-2208315](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208315.docx) Downlink positioning support and posSIB request for L2 UE-to-network remote UE MediaTek Inc., CATT, Huawei, HiSilicon CR Rel-18 38.331 17.1.0 3245 1 C TEI18 R2-2207288

* Postponed

[R2-2208317](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208317.docx) Indication to LMF of operation as a L2 UE-to-network remote UE MediaTek Inc., CATT, Huawei, HiSilicon CR Rel-18 37.355 17.1.0 0357 1 C TEI18 R2-2207289

* Postponed

[R2-2208319](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202208%20-%20RAN2_119-e,%20Online\Extracts\R2-2208319.docx) Positioning method support for L2 UE-to-network remote UE MediaTek Inc., CATT, Huawei, HiSilicon CR Rel-18 38.305 17.1.0 0104 1 C TEI18 R2-2207290

* Postponed

# Post-Meeting Email Discussions

* [Post119-e][401][Relay] LS to RAN1 on resource pool index in DCI format 3\_0 (vivo)

Scope: Draft an LS to RAN1 informing them of the conclusion under P1a in R2-2208934.

Intended outcome: Approved LS

Deadline: Short (not for RP)

* [Post119-e][402][Relay] Rel-17 relay 38.351 CR (OPPO)

Scope: Check the CR in R2-2208799.

Intended outcome: Agreed CR

Deadline: Short (for RP)

* [Post119-e][403][Relay] Relay 38.306 CR (Qualcomm)

Scope: Draft a CR to 38.306 reflecting agreements of this meeting.

Intended outcome: Endorsed CR for merge into mega CR

Deadline: Short (for RP), to be coordinated with 38.306 CR discussion

* [Post119-e][404][Relay] Relay 38.331 CR (Huawei)

Scope: Check the rapporteur CR in R2-2208813.

Intended outcome: Agreed CR

Deadline: Short (for RP)

* [Post119-e][405][Relay] LS to RAN1 on TP to 37.985 (ZTE)

Scope: Draft an LS to RAN1 introducing the endorsed TP in R2-2208815, and inviting them to decide whether to include it in TR 37.985.

Intended outcome: Approved LS

Deadline: Short (not for RP)

* [Post119-e][406][POS] Sidelink positioning protocol issues (Intel)

Scope: Discuss protocol design issues for sidelink positioning:

* Extension of LPP vs. use of SLPP/RSPP between UE and LMF when in coverage
  + Considering PC5-only and PC5+Uu cases
* Procedure types for SLPP/RSPP
  + LPP procedure types can be considered as a starting point for discussion
* Cast types for positioning signalling on PC5
  + In line with agreement from RAN2#119-e, this point does not include SL-PRS transmission, where we will follow RAN1

Intended outcome: Report to next meeting

Deadline: Long

* [Post119-e][407][POS] LPHAP upper layer enhancements (CATT)

Scope: Discuss the potential benefits of the candidate higher layer enhancements submitted to RAN2#119-e:

* Optimised paging and/or RRM measurements
* Enhancements of DL and/or UL positioning methods to use MT-SDT
* Enhance SRS configuration request to reduce signalling overhead (including area validity mechanism)
* Event report enhancements
* DL-PRS configuration optimisations
* Exposure of information to the gNB to support RRC state decisions
* Exposure of information to the gNB and/or LPF to identify UEs benefiting from LPHAP enhancements
* Enhancements to the segmentation mechanism for cooperation with LCS messages
* Support of RAT-dependent positioning in RRC\_IDLE

Intended outcome: Report to next meeting

Deadline: Long

* [Post119-e][408][Relay] Path operations in multi-path relaying (LG)

Scope: Discuss issues with path management in the multi-path relaying objective:

* The set of supported path addition/modification/removal procedures, for both scenarios 1 and 2
  + Baseline expectation is agnostic to scenarios 1 and 2
  + Can be discussed if some procedures can be omitted for scenario 2
* Need for a concept of a “primary path” and steps towards its definition if needed
* L2 functions in relation to the path concept, e.g., consequences of the bearer mapping agreement and PDCP duplication (for both scenarios 1 and 2)

Intended outcome: Report to next meeting

Deadline: Long

* [Post119-e][409][POS] Positioning 38.305 CR (Intel)

Scope: Check and finalise the CR in R2-2208801.

Intended outcome: Agreed CR

Deadline: Short (for RP)

* [Post119-e][410][POS] LS to RAN4 on capability for PRS measurement without MG (Intel)

Scope: Draft an LS to RAN4, check whether 14-3: PRS measurement without MG should be reported to the LMF.

Intended outcome: Approved LS

Deadline: Short (not for RP)

* [Post119-e][411][POS] Positioning 38.321 CR (Huawei)

Scope: Check and finalise the CR in R2-2208818.

Intended outcome: Agreed CR

Deadline: Short (for RP)

* [Post119-e][412][POS] Positioning 38.331 CR (Ericsson)

Scope: Check and finalise the CR in R2-2208825.

Intended outcome: Agreed CR

Deadline: Short (for RP)

* [Post119-e][413][POS] 37.355 CR (Qualcomm)

Scope: Check and finalise the CR in R2-2208800.

Intended outcome: Agreed CR

Deadline: Short (for RP)

* [Post119-e][414][POS] LPP capability CR (Intel)

Scope: Check and finalise the CR in R2-2208802.

Intended outcome: Agreed CR

Deadline: Short (for RP)