3GPP TSG-RAN WG2 Meeting #123bis R2-23xxxxx

Xiamen, China, October 9th – 13th, 2023

Source: Session Chair (MediaTek)

Title: Report from session on positioning and sidelink relay

# 4 EUTRA Rel-17 and earlier

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

## 4.4 Positioning corrections Rel-16 and earlier

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

This Agenda Item will be handled by email.

# 5 NR Rel-15 and Rel-16

Essential corrections only.

Tdoc Limitation: 6 tdocs in total for all sub agenda items.

In case a correction need to be reflected in both NR TS and LTE TS, the corrections should be submitted under one single AI (so the NR and LTE correction can be treatee together), the sub-Ais below this

## 5.3 NR Positioning Support

(NR\_newRAT-Core; leading WG: RAN1; REL-15; started: Mar. 17; closed: Jun. 19: WID: [RP-191971](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_85/Docs/RP-191971.zip))

(NR\_pos-Core; leading WG: RAN1; REL-16; started: Mar 19; target; Jun 20; WID: [RP-200218](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_87e/Docs/RP-200218.zip)).

(NR TEI16 Positioning)

### 5.3.1 General and Stage 2 corrections

Including incoming LSs if any, 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.

[R2-2309620](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309620%20Correction%20to%2038.305%20on%20NR%20E-CID%20-%20r16_final.docx) Correction to 38.305 on NR E-CID Huawei, HiSilicon CR Rel-16 38.305 16.9.0 0143 - F NR\_pos-Core

* Not pursued

[R2-2309621](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309621%20Correction%20to%2038.305%20on%20NR%20E-CID%20-%20r17_final.docx) Correction to 38.305 on E-CID r17 Huawei, HiSilicon CR Rel-17 38.305 17.6.0 0144 - A NR\_pos-Core

* Not pursued

Discussion:

Intel think it is correct but not essential. Ericsson have the same view and think the fields can be taken for granted.

### 5.3.2 Stage 3 corrections (RRC/LPP/MAC/capabilities)

[R2-2309622](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309622%20Correction%20to%2038.331%20on%20GNSS-ID%20R16_final.docx) Correction to 38.331 on GNSS-ID r16 Huawei, HiSilicon CR Rel-16 38.331 16.14.0 4309 - F NR\_pos-Core

[R2-2309623](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309623%20Correction%20to%2038.331%20on%20GNSS-ID%20R17_final.docx) Correction to 38.331 on GNSS-ID r17 Huawei, HiSilicon CR Rel-17 38.331 17.6.0 4310 - A NR\_pos-Core

Discussion:

Lenovo think the CR resembles a condition rather than the field description. They would prefer language of the form “if the UE includes this field it shall set gnss-ID to sbas” rather than mandatory present/absent otherwise.

Huawei think the UE sets first the GNSS ID and then determines that it is SBAS.

Intel think the intention is that if GNSS ID is not SBAS, the UE shall not set this field, so they see Lenovo’s proposal as correct.

Lenovo note that the coversheet has the wrong WI code (should be NR\_pos).

Ericsson think the change may not be essential since any UE implementation will do this.

* Added sentence to be replaced with “If the UE includes this field it shall set gnss-ID to sbas”.
* WI code to be corrected.
* Agreed in principle with these changes, as R2-2311370 (Rel-16) and R2-23011371 (Rel-17)

[R2-2309624](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309624%20Correction%20to%2037.355%20on%20broadcast%20information%20element%20R15_final.docx) Correction to 37.355 on broadcast information element Huawei, HiSilicon CR Rel-15 37.355 15.3.0 0467 - F NR\_newRAT-Core

* Not pursued

[R2-2309625](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309625%20Correction%20to%2037.355%20on%20broadcast%20information%20element%20R16_final.docx) Correction to 37.355 on broadcast information element-r16 Huawei, HiSilicon CR Rel-16 37.355 16.12.0 0468 - A NR\_newRAT-Core

* Not pursued

[R2-2309626](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309626%20Correction%20to%2037.355%20on%20broadcast%20information%20element%20R17_final.docx) Correction to 37.355 on broadcast information element-r17 Huawei, HiSilicon CR Rel-17 37.355 17.6.0 0469 - A NR\_newRAT-Core

* Not pursued

Discussion:

Qualcomm think the change is wrong; the intention is that the UE can decode each segment individually and use it, unlike octet string segmentation. Ericsson have the same understanding.

[R2-2310849](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310849%20GNSSF.docx) GNSS SSR corrections and notes Ericsson CR Rel-16 37.355 16.12.0 0472 - F NR\_pos-Core

* Not pursued (topic can be discussed as an enhancement to later releases)

[R2-2310850](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310850%20GNSSA.docx) GNSS SSR corrections and notes Ericsson CR Rel-17 37.355 17.6.0 0473 - A NR\_pos-Core

* Not pursued

Discussion:

Qualcomm understand we agreed to use the compact SSR format, and the changes extend beyond this to more quality fields per grid point; they understand that one quality is enough, and the grid can always be subdivided if needed. On the additional formulae, they think a reference is enough and we do not need to copy the details in from the ICD.

Ericsson think we are not consistent in this respect so far, and the double reference is not a good idea.

Swift think it may be helpful to be a bit more explicit in our spec, and they would like some more checking.

Ericsson think we could discuss offline.

Qualcomm think nothing is wrong in Rel-16, and it would be OK to discuss this as an enhancement but not as a correction in the legacy releases. Intel agree and think it could be a TEI18. Nokia also agree that the quality indicators are an enhancement, and they feel the IDC details should not be captured.

Swift are OK to discuss it as an enhancement, and they understand that we do not need to wait for RTCM. For the references, they think we can be contribution-driven, but they see that generally there is benefit in more explicit clarity in LPP.

Withdrawn/Not available

R2-2309644 Correction to 38.305 on E-CID r16 Huawei, HiSilicon discussion Rel-16 38.305 NR\_pos-Core Withdrawn

R2-2309645 Correction to 38.305 on E-CID r17 Huawei, HiSilicon discussion Rel-17 38.305 NR\_pos-Core Withdrawn

R2-2309646 Correction to 38.331 on GNSS-ID r16 Huawei, HiSilicon discussion Rel-16 38.331 NR\_pos-Core Withdrawn

R2-2309647 Correction to 38.331 on GNSS-ID r17 Huawei, HiSilicon discussion Rel-17 38.331 NR\_pos-Core Withdrawn

R2-2309648 Correction to 37.355 on broadcast information element-r15 Huawei, HiSilicon discussion Rel-15 37.355 NR\_newRAT-Core Withdrawn

R2-2309649 Correction to 37.355 on broadcast information element-r16 Huawei, HiSilicon discussion Rel-16 37.355 NR\_newRAT-Core Withdrawn

R2-2309650 Correction to 37.355 on broadcast information elementr-r17 Huawei, HiSilicon discussion Rel-17 37.355 NR\_newRAT-Core Withdrawn

# 6 NR Rel-17

Essential corrections only. Editorial/clarifications should be sent to be reviewed and approved by spec rapporteurs prior to submission. Editiorials should only be submitted by spec rapporteurs.

## 6.2 NR Sidelink relay

(NR\_SL\_Relay-Core; leading WG: RAN2; REL-17; WID: [RP-212601](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_93e/Docs/RP-212601.zip))

Tdoc Limitation: 2 tdocs

### 6.2.1 Control plane and Stage-2 corrections

A single CR per TS with miscellaneous corrections is encouraged. Small editorial corrections should be sent directly to the CR rapporteur. Larger open issues can be discussed with contributions (limited time).

CR rapporteur summary

[R2-2311261](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311261%20%5BPre123bis%5D%5B401%5D%5BRelay%5D.docx) Report of [Pre123bis][401][Relay] Rel-17 control plane corrections (Huawei) Huawei discussion Rel-17 NR\_SL\_relay-Core

38.300 corrections

Proposal 1: The stage 2 CRs in R2-2309918 and R2-2311220 are not essential, and not pursued.

Discussion:

Ericsson think on R2-2311220, RAN3 captured the message as a procedural step, and we should align with their procedure. Apple think it is OK to align with RAN3, but they have comments on the text; they think “configured by upper layers” is not needed and we can just say the UE is “triggered” to send the message.

Huawei agree that this change is technically correct, but there are a lot of SUI triggers and they think we should probably not add just this one; would we have to align a lot of other cases? Apple think this is quite an important case.

vivo are also OK with the intention of R2-2311220, but they think maybe we should check the general usage of the SUI in stage 2 and try to have a comprehensive fix.

Ericsson agree with Apple that this case is important for alignment across specifications; they agree it may not be needed for all cases.

OPPO understand that the intention is to align to RAN3, and they would like more time to check and decide if this case is needed.

Ericsson indicate that this step is explicitly mentioned in RAN3 because it is connected to the inter-gNB procedures.

Lenovo think the SUI message is captured in Rel-16, and we do not need to change anything.

OPPO think R2-2309918 is needed to align across specs; they understand that the related agreement referred to by Huawei in the document is to address an issue with multiple services sharing the same L2ID, but this case was later determined not to exist based on SA2 guidance. So they think stage 3 is correct and stage 2 should be updated.

MediaTek have the same understanding as OPPO.

vivo think stage 2 already indicates that the upper layer will release the link, so they do not see a misalignment.

Xiaomi think the concern was for buffered data, and the intention of the deleted text is to allow the UE to keep the connection for a short time; it does not mean that the UE will not release the link at all. OPPO think on this point, if the UE does not release the link, the network may assume it has been released and reconfigure the UE accordingly; normally we handle configuration changes immediately. Xiaomi think it does not prevent the network from establishing a new connection with another destination.

InterDigital agree with Xiaomi and think there is no issue from the network side.

Xiaomi agree with vivo’s reading that the upper layer is already guided to release the link.

OPPO wonder if the PC5 link can be maintained for a while when the indirect link has been released by the network, is the SRAP configuration invalid?

LG have the same understanding as Xiaomi and vivo that the release is triggered by upper layers.

Apple think the intention of the sentence is clear and the delay is intended to be temporary.

38.304 corrections

Proposal 2a: The 2nd change of replacing “for non L2 U2N Remote UE out-of-coverage” with “for out of coverage UE” to cover OoC remote UE when the frequency is included in sl-FreqInfoList in SIB12 in R2-2309516 is agreeable.

Discussion:

Ericsson are OK with the proposal, but they wonder what the wording originally meant. Nokia think it was just a mistake, but they think even with the correction, the paragraph is a little unclearly scoped (“is a remote UE” vs. “is acting as a remote UE”). Ericsson understand that the current text makes sense if decoded: If the UE acts as a remote UE, it has guidance from the text, and if not, SIB12 will not be taken into account. They are not sure “is a remote UE” vs. “is acting as a remote UE” is a clear distinction.

NEC think this may cause some ambiguity and the wording should be checked.

Proposal 2b: To discuss whether/how to clarify in TS38.304 that a Remote UE can use preconfiguration when the interested frequency is not included in SIB12, based on the 1st change and 3rd change in R2-2309516 as well as the proposals in R2-2310758.

Discussion:

Xiaomi think the scenario is not valid, because the relay UE will perform communication on the frequencies indicated by SIB12, so it would result in a mismatch between relay and remote.

Qualcomm think the proposal is confusing; they understand the intention is that if SIB12 does not provide any resources, the UE is allowed to use preconfiguration, and they think this is correct, but they are not sure if Nokia’s proposal is aligned with it.

Nokia wonder whether the UE is allowed to use preconfiguration in case of transmitting non-SL-relay-related data to other UEs; they think Xiaomi are correct that the mismatch scenario is not valid, but they are trying to distinguish between the relay and non-relay cases.

LG think the remote UE can assume when it receives SIB12, it is in coverage, and normally an in-coverage UE cannot use preconfiguration.

Xiaomi understand that relay and non-relay cases will always have different L2IDs, so Nokia’s concern should not apply.

InterDigital understand that if the UE is out of coverage or receives SIB12 from a relay, if the frequency information, the UE is by definition out of coverage on that frequency and allowed to use preconfiguration.

Qualcomm want to clarify whether we are discussing the case that SIB12 provides no frequency resources or only frequency resources in which the UE is not interested.

Ericsson understood that P2a is talking about a non-L2-relay UE in connection with a DRX configuration, and this is unrelated to P2b. For P2b, they think the concern is that an OOC remote UE that receives SIB12 from the relay UE would use the contents, but the same UE doing non-relay communication would use preconfiguration; they think the current spec is fine in this respect.

Nokia think we could keep the CR as is.

Qualcomm think we should clarify that if SIB12 provides any frequency resource, the UE is not allowed to use preconfiguration. Xiaomi wonder why SIB12 would be provided with no frequency information at all.

OPPO wonder if it is common understanding that for idle/inactive relay UEs, the UE will always follow SIB12 configuration, or if it may also use preconfiguration.

NEC think when the relay UE is in idle/inactive, it can operate as a legacy sidelink UE and operate inter-frequency.

vivo think we are close to convergence and we might be able to agree on the intended behaviour. OPPO have a different understanding on this aspect; they agree with NEC, and they wonder why the remote UE has to follow the SIB12 configuration if the relay UE does not.

Qualcomm would like to check this offline; they think there may be cases where the frequency is optional and the UE behaviour is unclear. Apple agree that more time to check would be useful.

* [AT123bis][419][Relay] Rel-17 relay 38.304 corrections (OPPO)

 Scope: F2F offline to continue discussion of P2a/P2b of R2-2311261 and attempt to reach an agreeable way forward.

 Intended outcome: Agreeable CR in R2-2311379

 Deadline: Wednesday 2023-10-11 2000 CST

 Schedule: Tuesday afternoon in Brk3 1430-1530

38.331 corrections

Proposal 3: The following changes to TS 38.331 are not pursued.

– The proposed changes in R2-2310035 and R2-2310036 for proactive PWS SIBs forwarding

– The proposed changes in R2-2310354 for sl-LocalID-Request in SUI

– The proposed changes in R2-2310701 for relay UE’s reconfiguration failure

Discussion:

Apple think the current text on sl-LocalID-Request has some problems and we need to do something, even if not identical to this proposal. Huawei think we need to clarify in RRC that it is only used for RRC\_CONNECTED remote UEs, and otherwise the paging info is needed.

Proposal 4: The following changes to TS 38.331 are agreeable. Can further check whether to have separate CRs or merge into one rapporteur CR.

– The changes in R2-2310493, and the 1st change in R2-2310599 of adding “PSSCH” before DMRS in clause 5.5.3.4, and the 3rd change in R2-2310035 of increasing the indent of “SL-SRAP-Config-r17” in subclause 6.3.5 are editorial, and can be merged into the rapporteur CR.

– In clause 5.3.7.3, a NOTE is added to clarify that a L2 U2N Relay UE may re-establish (e.g. via release and establish) the SL-RLC0 and SL-RLC1 of the connected L2 Remote UE(s) during RRC reestablishment procedure (R2-2310494)

– In clause 5.8.3.3 “or report other parameters related to U2N relay operation” is added after “if the UE initiates the procedure to request (configuration/ release) of NR sidelink U2N relay communication transmission resources” (based on the 4th change in R2-2310599)

– The proposed changes to the descriptions of event Y2 related parameters in R2-2310816

– In clause 5.3.5.16, “or received from RRCSetup message” is added at the end of “if sl-L2RemoteUE-Config is set to setup” (based on R2-2310838)

– In clause 5.8.3.2, “/ configured with measurement object associated to L2 U2N Relay UEs” is removed from discovery reception branch to discovery transmission branch (based on R2-2310600)

Discussion:

Lenovo think on the first item, it should not be restricted to PSSCH. Huawei understand that the measurement can only be based on PSSCH DMRS in the proposal, but they think PSCCH may also be valid.

vivo think on the second item, we should put it in a different section, because it is about the relay triggering re-establishment at the remote rather than a step of the relay’s own re-establishment procedure; they suggest the section on the notification message procedure. Lenovo agree and suggest section 5.3.7.3a.

Huawei think on the last bullet, it may be possible to avoid the SUI in case the network has provided a resource pool. OPPO think the SUI is still needed for the BSR in this case. Huawei wonder if it is needed for the Rx resource pool.

ZTE think the last bullet also applies to the communication resource request. Huawei think this applies only to measurement based on discovery.

ZTE think on the third bullet there are additional changes needed (third change from R2-2301599). Apple think the current text is correct. Huawei understand that the “either/or” case is covered by other bullets.

Agreements:

The following changes to TS 38.331 are not pursued.

– The proposed changes in R2-2310035 and R2-2310036 for proactive PWS SIBs forwarding

– The proposed changes in R2-2310354 for sl-LocalID-Request in SUI

– The proposed changes in R2-2310701 for relay UE’s reconfiguration failure

The following changes to TS 38.331 are agreeable and can be merged into one rapporteur CR.

– The changes in R2-2310493, and the 1st change in R2-2310599 of adding “PSSCH/PSCCH” before DMRS in clause 5.5.3.4, and the 3rd change in R2-2310035 of increasing the indent of “SL-SRAP-Config-r17” in subclause 6.3.5 are editorial, and can be merged into the rapporteur CR.

– In clause 5.3.7.3a, a NOTE is added to clarify that a L2 U2N Relay UE may re-establish (e.g. via release and establish) the SL-RLC0 and SL-RLC1 of the connected L2 Remote UE(s) during RRC reestablishment procedure (R2-2310494)

– In clause 5.8.3.3 “or report other parameters related to U2N relay operation” is added after “if the UE initiates the procedure to request (configuration/ release) of NR sidelink U2N relay communication transmission resources” (based on the 4th change in R2-2310599). Can discuss in CR drafting if something additional is needed.

– The proposed changes to the descriptions of event Y2 related parameters in R2-2310816

– In clause 5.3.5.16, “or received from RRCSetup message” is added at the end of “if sl-L2RemoteUE-Config is set to setup” (based on R2-2310838)

– In clause 5.8.3.2, “/ configured with measurement object associated to L2 U2N Relay UEs” is moved from discovery reception branch to discovery transmission branch (based on R2-2310600)

* [AT123bis][422][Relay] Rel-17 relay CR to 38.331 (Huawei)

 Scope: Merge the agreed changes to 38.331 for Rel-17 relay into a rapporteur CR.

 Intended outcome: Agreeable CR

 Deadline: Thursday 2023-10-12 2000 CST

The following documents will not be individually treated

[R2-2309516](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5C38304_CR0353_%28REL-17%29_R2-2309516%20-%20Correction%20on%20SIB%20and%20Preconfiguration%20applicability_V6.docx) Correction on SIB/Preconfiguration applicability OPPO, ZTE CR Rel-17 38.304 17.6.0 0353 - F NR\_SL\_enh-Core, NR\_SL\_relay-Core

[R2-2309918](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309918_38.300_CR0713_Rel17_PC5%20unicast%20link%20release%20timing%20correction%20in%20indirect%20to%20direct%20path%20switch%20case.docx) PC5 unicast link release timing correction in indirect to direct path switch case MediaTek Inc CR Rel-17 38.300 17.6.0 0713 - F NR\_SL\_relay-Core

* Not pursued (companies can consider whether something is needed)

[R2-2310035](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5C38331_CR4319_%28Rel-17%29_R2-2310035-Correction%20on%20the%20PWS%20SIB%20forwarding.docx) Correction on the PWS SIBs forwarding CATT CR Rel-17 38.331 17.6.0 4319 - F NR\_SL\_relay-Core

[R2-2310036](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310036_Discussion%20on%20PWS%20handling%20in%20L2%20U2N%20Relay%20Scenario.docx) Discussion on PWS Handling in L2 U2N Relay Scenario CATT discussion Rel-17 NR\_SL\_relay-Core

[R2-2310354](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310354%2038331_R17_relay_Correction_lcoal%20ID%20request.docx) Correction on the inclusion of sl-LocalID-Request in SUI Apple CR Rel-17 38.331 17.6.0 4325 - F NR\_SL\_relay-Core

[R2-2310493](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5C38331_CR4331_%28Rel-17%29_R2-2310493%20Miscellaneous%20corrections%20for%20SL%20relay.docx) Miscellaneous corrections for SL relay Huawei, HiSilicon CR Rel-17 38.331 17.6.0 4331 - F NR\_SL\_relay-Core

[R2-2310494](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5C38331_CR4332_%28Rel-17%29_R2-2310494%20SL-RLC0%20and%20SL-RLC1%20handling%20during%20L2%20Relay%20UE%20RRC%20reestablishment.docx) SL-RLC0 and SL-RLC1 handling during L2 Relay UE RRC reestablishment Huawei, HiSilicon CR Rel-17 38.331 17.6.0 4332 - F NR\_SL\_relay-Core

[R2-2310599](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5C38331_CR4337_%28Rel-17%29_R2-2310599_Correction%20on%20SUI%20for%20sidelink%20relay.docx) Correction on SUI for sidelink relay ZTE, Sanechips CR Rel-17 38.331 17.6.0 4337 - F NR\_SL\_relay-Core

[R2-2310600](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310600_Corrections%20on%20TS38.331%20for%20SL%20relay.docx) Correction on TS 388.331 for sidelink discovery ZTE, Sanechips CR Rel-17 38.331 17.6.0 4338 - F NR\_SL\_relay-Core

[R2-2310701](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310701%20ReconfFailureR17.docx) Handling of Relay UE’s reconfiguration failure Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SL\_relay-Core

[R2-2310758](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310758%20Applicability%20of%20SIB12%20and%20preconfiguration.docx) Preconfiguration applicability in relay scenarios Nokia, Nokia Shanghai Bell discussion NR\_SL\_relay-Core

[R2-2310816](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310816_38331_CR4352_%28Rel-17%29_RRC%20corrections%20for%20measurement%20reporting%20event%20Y2.docx) RRC corrections for measurement reporting event Y2 China Telecom, Huawei, HiSilicon CR Rel-17 38.331 17.6.0 4352 - D NR\_SL\_relay-Core

[R2-2310838](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CDocs%5CR2-2310838.zip) Correction on sidelink relay RRC Philips International B.V. CR Rel-17 38.331 17.6.0 4353 - F NR\_SL\_relay-Core

[R2-2311220](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311220%20-%2038.300_CR0719_Rel17_Correction%20on%20the%20SidelinkUEInformationNR%20message.docx) Correction on the SidelinkUEInformationNR message Ericsson CR Rel-17 38.300 17.6.0 0719 - F NR\_SL\_relay-Core

=> Postponed

### 6.2.2 User plane corrections

A single CR per TS with miscellaneous corrections is encouraged. Small editorial corrections should be sent directly to the CR rapporteur for the corresponding spec. Larger open issues can be discussed with contributions (limited time).

[R2-2309685](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309685_38351_CR0026_%28REL-17%29%20-Align%20terminology%20of%20PC5%20Relay%20RLC%20channel.docx) Align terminology of PC5 Relay RLC channel OPPO CR Rel-17 38.351 17.6.0 0026 - F NR\_SL\_relay-Core

* Not pursued

Discussion:

ZTE note that this terminology is also used in the stage 2 spec.

Huawei indicate that there is a definition in the RRC spec for “PC5 Relay RLC Channel”.

Apple think we do not need the CR. OPPO think this concern was expressed in Rel-18 and there is an attempt to align the Rel-17 spec with where we are going in Rel-18.

Apple understand that ingress and egress just define the direction of the channel, and 2the same channel concept can be used by both directions.

Samsung indicate that the definitions are there in 38.300, and they think the “egress” and “ingress” modifiers are clear.

[R2-2310353](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310353%2038321_R17_relay_Correction_Destination_index.docx) Clarifications on the Destination Index usage in SL BSR Apple CR Rel-17 38.321 17.6.0 1680 - F NR\_SL\_relay-Core

* Postponed

Discussion:

NEC wonder if the MAC is the correct spec to add the first note, or if it should be in RRC with the SUI message.

Qualcomm wonder if there is a case in the second change where the L2IDs can be the same in different entries.

Nokia think the change is not essential since it only adds a NOTE, and they agree that maybe the first note should be in the RRC CR.

Huawei understand that the first change is already reflected in the RRC spec, and it should be clear that the total number does not exceed 32. For the second change, they have the same understanding as Qualcomm that the same L2ID can be reported twice in the signalling format, but the UE will not actually report it twice because the L2IDs for legacy and relay operation are different.

Apple understand that the RRC spec defines the max ID as 32, but they think it is not clear that the total limit is 32; they would be OK to clarify in either spec. On the second issue, they wonder about L2 vs. L3 relay and whether they can have the same L2ID. Huawei understand that the link will be established for one purpose: L2 or L3 or V2X, meaning that the L2ID will be different for different services.

Xiaomi think even if one UE supports L2 and L3, the ID will be different, as confirmed by LS from SA2 earlier. So they think the second change is not needed. For the first note, they think the RRC spec is already adequately clear.

ZTE also think L2 and L3 will have different L2IDs and RSCs.

Apple think on the first change, there is no restriction on the number of destinations from the UE perspective.

Ericsson wonder about the second note: Is the intention that the 32 entries will be filled with unique values by the network? If so, they understand that there is no issue either for the first or second note.

Huawei indicate that the number is for the UE reporting in the resource request, and there is no explicit network control; the maximum number is calculated by the UE and there may be some ambiguity. They are OK with the first NOTE proposed in the CR.

Xiaomi checked the SL BSR MAC CE, and the destination field is 5 bits, so it is intrinsically limited to 32.

Apple indicate there is such a note in the LTE MAC spec.

Ericsson are not clear what the problem is.

NEC think some clarification is needed about whether the UE should report no more than 32 destination IDs, or the network cannot generate more than 32 indices.

vivo think Ericsson’s point is valid and the clarification may not be needed.

InterDigital think there is some benefit to aligning with the LTE spec.

## 6.4 NR positioning enhancements

(NR\_pos\_enh-Core; leading WG: RAN1; REL-17; WID: [RP-210903](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_91e/Docs/RP-210903.zip))

Tdoc Limitation: 2 tdocs

### 6.4.1 Stage 3 corrections

A single CR per TS (RRC, LPP, MAC, UEcap 306) with miscellaneous corrections is encouraged. Small editorial corrections should be sent directly to the CR rapporteur. Larger open issues can be discussed with contributions (limited time).

[R2-2310693](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310693.docx) Correction of existing SSR IEs in A-GNSS for BDS system CATT, CAICT discussion Rel-17

[R2-2309609](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309609_37355_CR0466_%28Rel-17%29.docx) Correction of existing SSR IEs in A-GNSS for BDS system CATT, CAICT, CMCC, China Telecom, China Unicom, Huawei, ZTE Corporation, MediaTek Inc., OPPO, xiaomi, vivo, Spreadtrum CR Rel-17 37.355 17.6.0 0466 - F NR\_pos\_enh-Core

* Revised in R2-2311263

[R2-2311263](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311263_37355_CR0466r1_%28Rel-17%29-revision%20of%20R2-2309609.docx) Correction of existing SSR IEs in A-GNSS for BDS system CATT, CAICT, CMCC, China Telecom, China Unicom, Huawei, ZTE Corporation, MediaTek Inc., OPPO, xiaomi, vivo, Spreadtrum CR Rel-17 37.355 17.6.0 0466 1 F NR\_pos\_enh-Core

Discussion:

Ericsson would like some more discussion, but they understand that this is for direct satellite distribution and not needed in LPP.

Nokia note that the coversheet indicates the fields are introduced because they are lacking in RTCM, so they see it as an enhancement rather than a correction.

CATT think it can be discussed offline, and they understand that if devices need to receive the signal from the satellite without the correction data, it increases the receiver cost.

Qualcomm agree with Ericsson and Nokia; they understand that the CR intends to apply the corrections to B1C, and they think this could be done with a simple flag applying the iod to B1C. They think the added fields are unnecessary and cannot be used by the UE, because it does not know which messages the LMF is using.

Swift agree with Ericsson and Qualcomm; they also have some concern about backward compatibility.

CATT would still prefer to use the new IEs; they think the server cannot provide the SSR corrections directly otherwise. Qualcomm agree this is true, but they think providing the correction for B1C ephemeris just requires the flag.

* [AT123bis][415][POS] BDS B1C corrections (CATT)

 Scope: Discuss the proposed changes from R2-2311263 and determine if there is an agreeable way forward.

 Intended outcome: Report to Thursday CB session in R2-2311372

 Deadline: Wednesday 2023-10-11 2000 CST

[R2-2309627](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309627%20Correction%20to%20UE%20capability%20for%20batch%20reporting.docx) Correction to UE capability for batch reporitng Huawei, HiSilicon CR Rel-17 37.355 17.6.0 0470 - F NR\_pos\_enh-Core

* Postponed

[R2-2309919](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309919%20Issue%20on%20dl-prs-ResourceSetPeriodicityReq-r17.docx) Issue on dl-prs-ResourceSetPeriodicityReq-r17 Samsung discussion Rel-17 NR\_pos\_enh-Core

[R2-2309920](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309920_Addition%20of%20reference%20SCS%20for%20dl-prs-ResourceSetPeriodicityReq-r17.docx) Addition of reference SCS for dl-prs-ResourceSetPeriodicityReq-r17 Samsung CR Rel-17 37.355 17.6.0 0471 - F NR\_pos\_enh-Core

* Not pursued

Discussion:

vivo think the issue is valid, but they understand the LMF is aware of the SCS from the SSB of the serving cell, so they think it is enough to add a clarification of the interpretation of the SCS. Huawei agree, and they understand from RAN3 colleagues that the LMF can know the SCS.

ZTE think the LMF cannot know the current cell when the UE is in RRC\_INACTIVE; they see that an alternative solution would be to let the UE report the timing at ms granularity.

Ericsson think an LMF will not look into the value specifically for each UE, and they do not see that a correction is needed; they would be more comfortable with the clarification proposed by vivo.

OPPO agree with ZTE’s approach to include the time units in ms.

Samsung think vivo’s suggestion does not solve the problem, because in NRPPa the SCS information can include multiple values, and there could be ambiguity. As a compromise, they can accept indicating the timing in ms as suggested by ZTE.

Qualcomm think no change is needed; they would be OK with the suggestion from vivo, and they think the LMF needs to know the SCS.

Apple and Intel agree with Qualcomm and would be OK with vivo’s proposal.

Samsung think in vivo’s solution, there is no way for the LMF to indicate the SCS to a non-serving gNB.

ZTE think the UE should be able to report the time units as ms, which would avoid NRPPa impact because the LMF can send the gNBs the actual timing. CMCC agree with ZTE.

Intel understand that the parameters came from RAN1 and we should not change the timing without guidance from them.

OPPO think in vivo’s CR, it is not quite clear why the LMF is aware of the SSB; they would like some time to check offline.

CATT agree with vivo’s approach; they understand that the LMF can collect the SCS in the TRP information exchange.

Nokia think no additional signalling is needed, but a clarification would be OK.

[R2-2310545](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310545%20Discussion%20on%20LocationMeasurementIndication%20procedure%20for%20positioning.docx) Discussion on LocationMeasurementIndication procedure for positioning ZTE Corporation discussion Rel-17 NR\_pos\_enh-Core

[R2-2310575](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310575%20Correction%20on%20LocationMeasurementIndication%20procedure%20for%20positioning.docx) Correction on LocationMeasurementIndication procedure for positioning ZTE Corporation CR Rel-17 38.331 17.6.0 4336 - F NR\_pos\_enh-Core

Discussion:

Chair understands that this will result in triggering the stop procedure when the MAC CE has been triggered. Huawei have the same understanding and think the change is not correct.

Qualcomm think the existing text is confusing and the change is more logical; they see that the current text can lead to a situation where the stop is never sent.

Ericsson think we need to understand the motivation better. They think the idea is that if both legacy and preconfigured MGs are configured, the legacy gaps may never be stopped, and this might be an issue, but they agree with Huawei that cancelling the MAC CE should also stop the activation.

ZTE agree with Ericsson’s summary of the intention; they think the stop procedure is needed when the UE does not need to measure PRS any more.

vivo think the issue is valid, but some precondition is needed to prevent the stop from always being triggered.

Qualcomm think we made a mistake by mixing the preconfigured gap with the stop criteria; they understand that if there is a start there must be a stop, and with the current text, the stop may not happen.

Ericsson think we send a stop in the current text.

Huawei think the first change could be replaced by removing the list of examples.

ZTE indicate after some offline discussion, there is a view that the issue is valid but companies want some time to check the wording.

* [AT123bis][417][POS] LocationMeasurementIndication procedure (ZTE)

 Scope: Check the wording for the issue raised in R2-2310575 and converge on an agreeable version.

 Intended outcome: Agreeable CR in R2-2311377

 Deadline: Wednesday 2023-10-11 2000 CST

[R2-2310616](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310616%20Clarification%20on%20the%20field%20description%20of%20dl-prs-ResourceSetPeriodicityReq.docx) Clarification on the field description of dl-prs-ResourceSetPeriodicityReq vivo draftCR Rel-17 37.355 17.6.0 F NR\_pos\_enh-Core

* [AT123bis][416][POS] dl-prs-ResourceSetPeriodicityReq clarification (vivo)

 Scope: Discuss the clarification proposed in R2-2310616 and determine if it is an acceptable way forward or if something else (e.g., explicit timing) is needed.

 Intended outcome: Report to Thursday CB session in R2-2311373

 Deadline: Wednesday 2023-10-11 2000 CST

[R2-2310644](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310644%20Correction%20to%20activated%20measurement%20gap%20and%20PPW_final.docx) Correction to activated measurement gap and PPW Huawei, HiSilicon CR Rel-17 38.321 17.6.0 1685 - F NR\_pos\_enh-Core, NR\_MG\_enh-Core

* Not pursued

Discussion:

Ericsson think this is more of an editorial correction.

Huawei think if there are other MAC changes, we can merge with them, but this may be the only MAC change.

Intel agree it is editorial and should not be pursued.

ZTE agree with Intel.

[R2-2310851](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310851%20PeriodicCR%20and%20HAGNSS.docx) Missing finer periodicities than 1s and HA GNSS Metrics field description correction Ericsson CR Rel-17 37.355 17.6.0 0474 - F NR\_pos\_enh-Core

* To be revised to include only the field description correction

Discussion:

Ericsson understand that without the change of periodicities, we cannot meet the finer latency requirements.

Qualcomm are not against the concept but do not see it as a correction. They understand that there are changes to the deferred MT-LR procedure in CT4 but do not see a connection to LPP.

Ericsson understand that the first report will be at the scheduled location time and the second according to the periodicity, so there is a connection between the two. Qualcomm agree but understand that the periodicity in question is configured in SS messages, not by LPP. They understand that in LTE and NR, periodic reporting is purely an SS feature.

OPPO are not sure where the requirement for this change comes from.

Intel think the latency requirement can be met without the change, so they agree with Qualcomm that it is an enhancement.

CATT note that the coversheet says Rel-18; they are OK with a Rel-18 change. They do not think RAT-independent positioning methods will be affected, because it targets IIoT.

vivo think the field description issue is valid; the current description is wrong.

Ericsson have a different understanding from Qualcomm on the relationship between periodic reporting and scheduled location time. They understand that the CT4 specs include sub-1s requests that we would not be able to handle; they expect an LS and think we could await that and discuss offline in the meantime. They also confirm that Rel-18 on the coversheet is a mistake, and they understand that it applies to both RAT-dependent and RAT-independent methods.

Qualcomm still think this is not a Rel-17 correction.

* [AT123bis][418][POS] Field description correction for HA-GNSS metrics (Ericsson)

 Scope: Revise the CR in R2-2310851 to include only the field description correction and check the resulting CR.

 Intended outcome: Agreed-in-principle CR (without CB if possible) in R2-2311378

 Deadline: Wednesday 2023-10-11 2000 CST

[R2-2310909](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310909_%28TEG%20Capability%29.docx) Correction to UE TEG Capability Qualcomm Incorporated CR Rel-17 37.355 17.6.0 0475 - F NR\_pos\_enh-Core

* Agreed in principle

Withdrawn/Not available

R2-2310913 Updates for the consumption of posSIBs assistance data element Ericsson, Intel Corporation CR Rel-17 37.355 17.6.0 0476 - F NR\_pos\_enh-Core Withdrawn

### 6.4.2 Stage 2 corrections

A single CR with miscellaneous corrections is encouraged. Small editorial corrections should be sent directly to the CR rapporteur. This agenda item will be handled at lower priority.

[R2-2310997](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310997%20posSIB.docx) Updates for the consumption of posSIBs assistance data element Ericsson, Intel Corporation, AT&T CR Rel-17 38.305 17.6.0 0147 - F NR\_pos\_enh-Core

* Not pursued

Discussion:

Samsung agree with the intention but have some concern with the last sentence; they think the UE cannot use the posSIB for standalone because by definition it does not involve network AD.

OPPO think a smart UE will only use proper AD for the positioning method and this could be left to implementation.

Qualcomm think this is not essential, but if it is wanted, the wording can be improved; it should be phrased from the UE point of view. They also think that the last sentences on standalone are not needed.

Huawei agree that it is not essential, because the UE and LMF will never have different understandings of the AD that the UE is using. For standalone mode, they think it is up to the UE what to do.

Ericsson indicate the main intention is that not all methods can be used standalone, and the UE should not be permitted to use non-standalone methods in a standalone way with the AD from the posSIBs.

Lenovo are not convinced that this is needed. If it is essential, they think it is essential from Rel-15, otherwise we should not have it in Rel-17 either.

CATT think it is clear in stage 2 which methods can be used standalone. Chair thinks a UE that tries to do DL-TDOA standalone is in violation of stage 2. Ericsson agree but think the requirements we have on the AD were written from a unicast point of view, and they agree with Lenovo that it could be introduced from Rel-15.

Ericsson think stage 2 indicates the supported positioning modes, but in their view it is not absolutely clear what is allowed with broadcast signalling since the requirements were written with dedicated signalling in mind. They think some clarification is needed but the wording could be discussed.

Qualcomm think from the UE point of view, there is no difference between AD received point-to-point or broadcast, and they do not think the change adds value. They are concerned that the CR could invite more corrections later.

Huawei agree with Qualcomm, and they wonder why the UE cannot do standalone DL-TDOA without the network’s knowledge.

Intel think since stage 2 only mentions standalone mode for the methods for which it is supported, it is not absolutely clear today.

Qualcomm think we do not say what is not supported, but for each method we mention the modes that are supported.

Withdrawn/Not available

R2-2310852 Updates for the consunmption of posSIBs assistance data element Ericsson, Intel Corporation CR Rel-17 38.305 17.6.0 0145 - F NR\_pos\_enh-Core Withdrawn

# 7 Rel-18

## 7.2 Expanded and improved NR positioning

(NR\_pos\_enh2; leading WG: RAN1; REL-18; WID: [RP-232670](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_101/Docs/RP-232670.zip))

Time budget: 2 TU

Tdoc Limitation: 4 tdocs

### 7.2.1 Organizational

Including incoming LSs and rapporteur inputs.

Incoming LSs with RAN2 in Cc:

[R2-2309406](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309406_C1-236562.docx) LS on LPP message and supplementary service event report over a user plane connection between UE and LMF (C1-236562; contact: Ericsson) CT1 LS in Rel-18 5G\_eLCS\_Ph3 To:SA2 Cc:SA3, RAN2, CT4

[R2-2309452](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309452_R4-2314357.docx) Reply LS on single measurement gap for DL PRS with Rx Hopping (R4-2314357; contact: Xiaomi) RAN4 LS in Rel-18 NR\_pos\_enh2-Core To:RAN1 Cc:RAN2

[R2-2309477](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309477_S2-2310025.docx) Reply LS on Reply LS on security aspects for Ranging/Sidelink Positioning (S2-2310025; contact: Xiaomi) SA2 LS in Rel-18 Ranging\_SL To:SA2 Cc:RAN2

Incoming LSs with “take into account” action and no draft reply

[R2-2309409](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309409_R1-2308349.docx) Reply LS on LPHAP (R1-2308349; contact: Huawei) RAN1 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2 Cc:RAN3, RAN4

[R2-2309419](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309419_R1-2308559.docx) LS on Priority Handling for SL Positioning (R1-2308559; contact: Intel) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN2

[R2-2309423](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309423_R1-2308571.docx) LS on the longer PRS/SRS periodicity for LPHAP (R1-2308571; contact: Huawei) RAN1 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2, RAN3

[R2-2309453](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309453_R4-2314358.docx) LS on SL positioning and CPP measurements report mapping (R4-2314358; contact: CATT) RAN4 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2, RAN3 Cc:RAN1

[R2-2309454](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309454_R4-2314360.docx) Reply LS on LPHAP (R4-2314360; contact: Huawei) RAN4 LS in Rel-18 NR\_pos\_enh2 To:RAN2 Cc:RAN1, RAN3

LS on PRUs (handled in offline [402])

[R2-2309427](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309427_R1-2308644.docx) Reply LS on PRU Procedures (R1-2308644; contact: CATT) RAN1 LS in Rel-18 NR\_pos\_enh2-Core, 5G\_eLCS\_Ph3 To:SA2, RAN2, RAN3 Cc:RAN4

Other incoming LSs and draft replies from contact company

[R2-2309428](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309428_R1-2308646.doc) LS on TRP ID for positioning with bandwidth aggregation (R1-2308646; contact: ZTE) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN2

[R2-2309429](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309429_R1-2308649.docx) LS on RSRP based TA validation for LPHAP (R1-2308649; contact: Huawei) RAN1 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2

[R2-2309637](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309637%20Draft%20reply%20LS%20on%20LPHAP%20TA%20validation_v00.doc) Draft reply LS on LPHAP TA validation Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2 To:RAN1

[R2-2309430](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309430_R1-2308651.docx) LS on the resource selection window for Scheme 2 in a dedicated resource pool for positioning (R1-2308651; contact: Qualcomm) RAN1 LS in Rel-18 NR\_pos\_enh2 To:RAN2 Cc:SA2

[R2-2309474](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309474_S2-2309926.docx) Response LS to RAN WG2 on reporting positioning measurements taken in RRC\_IDLE (S2-2309926; contact: CATT) SA2 LS in Rel-18 NR\_pos\_enh2, 5G\_eLCS\_Ph3 To:RAN2 Cc:RAN1

[R2-2309597](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309597%20Reply%20LS%20to%20SA2%20on%20reporting%20positioning%20measurements%20taken%20in%20RRC_IDLE.docx) Reply LS to SA2 on reporting positioning measurements taken in RRC\_IDLE CATT LS out Rel-18 NR\_pos\_enh2, 5G\_eLCS\_Ph3 To:SA2

[R2-2309465](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309465_R4-2314483.docx) LS on PRS/RRM measurement when eDRX cycle > 10.24s (R4-2314483; contact: Ericsson) RAN4 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2

[R2-2311265](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311265%20LS.docx) LS on PRS/RRM measurement when eDRX cycle > 10.24s Ericsson LS out Rel-18 NR\_pos\_enh2 To:RAN4

Work plan

[R2-2309596](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309596%20Work%20Plan%20for%20Rel-18%20WI%20on%20Expanded%20and%20Improved%20NR%20Positioning.docx) Work Plan for Rel-18 WI on Expanded and Improved NR Positioning CATT, Intel Corporation, Ericsson Work Plan Rel-18

Draft reply on PRUs

[R2-2309598](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309598%20%5BDraft%5DReply%20LS%20on%20Reply%20LS%20on%20PRU%20Procedures.doc) [Draft]Reply LS on Reply LS on PRU Procedures CATT LS out Rel-18 NR\_pos\_enh2 To:RAN1 Cc:RAN3, RAN4, SA2

* [AT123bis][402][POS] PRUs (CATT)

 Scope: Email to discuss the incoming LS in R2-2309427 and draft reply in R2-2309598, along with the contributions in R2-2310854 and R2-2310920 and P1 of R2-2309608, reply and evaluate the RAN2 impact for PRU support.

 Intended outcome: Reply LS in R2-2311375 and report to Thursday CB session in R2-2311376

 Deadline: Wednesday 2023-10-11 1900 CST

Other draft replies

[R2-2309599](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309599%20Reply%20LS%20on%20TRP%20ID%20for%20positioning%20with%20bandwidth%20aggregation.doc) Reply LS on TRP ID for positioning with bandwidth aggregation CATT LS out Rel-18 NR\_pos\_enh2 To:RAN1

Running CRs

[R2-2309600](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309600%20LPP%20running%20CR%20for%20LPHAP.docx) LPP running CR for LPHAP CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2

[R2-2309601](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309601%20LPP%20running%20CR%20for%20Carrier%20Phase%20Positioning.docx) LPP running CR for Carrier Phase Positioning CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2

[R2-2309602](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309602%20LPP%20running%20CR%20for%20bandwidth%20aggregation.docx) LPP Running CR for bandwidth aggregation CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2

[R2-2309603](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309603%20LPP%20running%20CR%20for%20RAT-dependent%20integrity.docx) LPP running CR for RAT-dependent integrity CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2

[R2-2309604](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309604%20LPP%20running%20CR%20for%20Redcap%20Positioning.docx) LPP Running CR for Redcap positioning CATT draftCR Rel-18 37.355 17.6.0 B NR\_pos\_enh2

[R2-2309632](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309632%20Draft%20running%20MAC%20CR%20for%20LPHAP_final.docx) Running MAC CR for LPHAP Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2

[R2-2309633](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309633%20Draft%20running%20MAC%20CR%20for%20sidelink%20positioning_final.docx) Running MAC CR for Sidelink Positioning Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2

[R2-2309635](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309635%20Draft%20Running%20MAC%20CR%20for%20CA%20positioning_final.docx) Running MAC CR for CA positioniing Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2

[R2-2309636](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309636%20Draft%20Running%20MAC%20CR%20for%20REDCAP%20positioning_final.docx) Running MAC CR for REDCAP positioning Huawei, HiSilicon draftCR Rel-18 38.321 17.6.0 NR\_pos\_enh2

[R2-2309667](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309667%20Running%2038300%20CR%20for%20sidelink%20positioning.docx) Running 38300 CR for sidelink positioning vivo discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2310860](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310860%20SLRRC.docx) Rapporteur CR for Sidelink Positioning RRC Changes Ericsson discussion Rel-18

[R2-2310861](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310861%20CPP.docx) Rapporteur CR for CPP Positioning RRC Changes Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2

[R2-2310862](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310862%20recap.docx) Rapporteur CR for Redcap Positioning RRC Changes Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2

[R2-2310863](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310863%20BWA.docx) Rapporteur CR for bandwidth aggregation Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2

[R2-2310911](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310911_%28Running%20Stage%202%20CR%29_v02.docx) Running Stage 2 CR for 'Expanded and improved NR positioning' Qualcomm Incorporated draftCR Rel-18 38.305 17.6.0 B NR\_pos\_enh2

[R2-2310980](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310980%20Running%20CR%20for%20RRC.docx) Running CR for Positioning Ericsson draftCR Rel-18 38.331 17.6.0 B NR\_pos\_enh2

* [AT123bis][403][POS] LPP CRs (CATT)

 Scope: Check and update the Rel-18 positioning CRs to 37.355.

 Intended outcome: Endorsable CRs

 Deadline: Thursday 2023-10-12 2000 CST

* [AT123bis][404][POS] Positioning MAC CRs (Huawei)

 Scope: Check and update the Rel-18 positioning CRs to 38.321.

 Intended outcome: Endorsable CRs

 Deadline: Thursday 2023-10-12 2000 CST

* [AT123bis][405][POS] Positioning RRC CRs (Ericsson)

 Scope: Check and update the Rel-18 positioning CRs to 38.331.

 Intended outcome: Endorsable CRs

 Deadline: Thursday 2023-10-12 2000 CST

* [AT123bis][406][POS] Positioning 38.305 CR (Qualcomm)

 Scope: Check and update the Rel-18 positioning CR to 38.305.

 Intended outcome: Endorsable CR

 Deadline: Thursday 2023-10-12 2000 CST

* [AT123bis][407][POS] Positioning 38.300 CR (vivo)

 Scope: Check and update the Rel-18 positioning CR to 38.300.

 Intended outcome: Endorsable CR

 Deadline: Thursday 2023-10-12 2000 CST

TS 38.355

[R2-2310218](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310218%20SLPP%20considerations.docx) Further considerations on SLPP specification Intel Corporation discussion Rel-18 NR\_pos\_enh2

[R2-2310219](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310219%2038.355%20TP%20on%20SLPP%20sessino%20handling.docx) TS38.355 TP on SLPP session and session procedure Intel Corporation discussion Rel-18 NR\_pos\_enh2

[R2-2310220](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310220%2038.355%20TP%20on%20ASN1.docx) TS38.355 TP on ASN.1 part Intel Corporation discussion Rel-18 NR\_pos\_enh2

R2-2310221 TS38.355 TP on SLPP procedure Intel Corporation discussion Rel-18 NR\_pos\_enh2

[R2-2310222](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CDocs%5CR2-2310222.zip) TS 38.355 v1.1.0 Intel Corporation draft TS Rel-18 38.355 1.1.0 NR\_pos\_enh2

UE capabilities

[R2-2310444](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310444%20Discussion%20on%20R18%20positioning%20UE%20capabilities_V2.doc) Discussion on R18 positioning UE capabilities Beijing Xiaomi Mobile Software discussion Rel-18

Withdrawn/Not available

R2-2310864 Running RRC CR for Positioning Ericsson CR Rel-18 38.331 17.6.0 4355 - B NR\_pos\_enh2 Withdrawn

### 7.2.2 Sidelink positioning

Positioning architecture and unicast signalling procedures (e.g. configuration, measurement reporting, etc) to enable session-based sidelink positioning for a single target UE. Including measurements to enable RTT-based positioning, SL-AoA, and SL-TDOA; signalling and associated UE behaviour for support of unicast, groupcast (not including many-to-one) and broadcast of SL-PRS transmissions; reporting signalling and procedures to facilitate support of SL positioning between UEs and between UEs and LMF (the latter for in-coverage scenarios only and including joint PC5-Uu scenarios, and with the assumption that all UEs are served by the same LMF); and signalling to NG-RAN for SL positioning and service authorization as needed. No work on procedures for synchronization of the anchor UEs for SL-TDOA.

Including report of [Post123][401][POS] RAN2 impact from SL-PRS parameters (Intel)

Including report of [Post123][403][POS] Sidelink positioning MAC issues (Huawei)

Email discussion reports

[R2-2310216](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310216.docx) Report of [Post123][401][POS] RAN2 impact from SL-PRS parameters (Intel) Intel Corporation discussion Rel-18 NR\_pos\_enh2

Proposal 1: RAN2 confirms that the RAN1 provided SL-PRS related parameters correspond specifically to the dedicated SL-PRS resource pools.

Proposal 2: The configuration of SL-PRS related parameters to the UE shall follow the same principle as SL communication, i.e. rely on NW/gNB for in coverage and pre-configuration for out of coverage case.

Proposal 3: For configuration of SL-PRS dedicated pool, agree to reuse the existing signaling for a given SL resource pool (i.e. SL-ResourcePool) and define any new SL-PRS related parameters as needed within. The associated TP provided in the annex can be used as a starting point.

Proposal 4: RAN2 discuss whether the SL-PRS sequence ID shall be provided to the TX UE by the LMF/Server UE (via SLPP signaling) or determined by TX UE itself.

Proposal 5: Agree to introduce multiple SL-PRS configurations of Tx UEs within the SLPP message ProvideAssistanceData. FFS on whether to further specify how the server gets the multiple SL-PRS configurations.

Proposal 6: SL-PRS configuration is captured per positioning method (as per the TP in the annex). May be revised once the signalling is clear.

Proposal 7: SLPP signaling for SL positioning measurement reporting can be defined using the associated IE structure within ProvideLocationInformation IE in LPP as baseline. The signaling included in the Annex can be used as a starting point by SLPP specification rapporteur.

Proposal 8: Agree to the proposed grouping of SL positioning measurement reporting parameters into applicable SL positioning methods for capturing in SLPP specification

Proposal 9: RAN2 is proposed to discuss the following aspects as part of capturing the SL Positioning measurement related parameters in the SLPP specification:

- Whether to capture UE location related information in SLPP (or rely on existing LPP to carry it)?

- Whether to define specific IEs for carrying location estimates for ranging and the detailed format?

Proposal 10: Agree that for the case of absolute SL positioning, the following can be said about the anchor UE’s absolute location:

- For Network based operation (UE assisted), the anchor UE location shall be provided to the LMF

- For Network assisted operation (UE based/network assisted), the anchor UE location shall be provided to the UE

- For UE only operation, the anchor UE location shall be provided to the server UE

Proposal 11: For the case of UE-based positioning, Server UE provides the anchorUE-location-Information of anchor UEs to the target UE via SLPP ProvideAssistanceData signaling. FFS whether we need to consider the case of no server UE or when it is collocated with the target UE.

[R2-2309634](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309634%20Summary%20of%20%5BPost123%5D%5B403%5D%5BPOS%5D%20Sidelink%20positioning%20MAC%20issues%20%28Huawei%29.docx) Summary of [Post123][403][POS] Sidelink positioning MAC issues (Huawei) Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2

[“Green” easy proposals]

Resource allocation in scheme 1: DG

Proposal1a: Support the following contents within the MAC CE for SL-PRS resource request:

 Destination ID [10]. FFS whether it should be a list of destination IDs

 Priority [13]

Proposal2: When UL-SCH resource cannot accommodate SL-PRS resource request MAC CE plus its subheader, the UE should send SR to the gNB, either by SR-PUCCH or SR-PRACH. [14/14]

Proposal3: SL-PRS resource request MAC CE is cancelled when the MAC CE is transmitted. FFS additional similar conditions as SL-BSR. [13/14]

Proposal4: SR triggered by the SL-PRS resource request MAC CE is cancelled when the MAC CE is transmitted. FFS additional similar conditions as SL-BSR. [14/14]

Resource allocation scheme 1: CG type 2

Proposal5: Do not support activation/deactivation of the CG type2 by the UE sending a MAC CE. [11/13]

Proposal6: CG confirmation MAC CE is needed when the DCI for CG type 2 activation/deactivation command is successfully received. [14/14]

Resource allocation Scheme2: resource pool selection

Proposal9: Confirm that dedicated/shared RP can be configured at the same time. [15/15]

Proposal11: When resource selection is triggered for SL-LCH data transmission, dedicated pool should not be selected. [15/15]

Resource allocation scheme2: RX resource selection/reselection conditions

Proposal12: Legacy conditions for resource selection/reselection check can be reused when the shared pool is selected. [15/15] The following are FFS:

 Whether for the condition of sl-reselectAfter, enhancements are needed

 Whether for the DRX part, the condition is still needed

 Whether the resource selection condition is the same as dedicated resource pool when the shared resource pool is only selected for SL-PRS transmission.

Proposal13: Legacy conditions for resource selection/reselection can be the baseline when the dedicated pool is selected. [15/15]

Proposal14: The following two conditions are not applicable for the conditions for resource selection/reselection for dedicated resource pool. [15/15]

 if PSCCH duration(s) and 2nd stage SCI on PSSCH for all transmissions of a MAC PDU of any selected sidelink grant(s) are not in SL DRX Active time as specified in clause 5.28.3 of the destination that has data to be sent.

 if the selected sidelink grant cannot accommodate a RLC SDU by using the maximum allowed MCS configured by RRC in sl-MaxMCS-PSSCH associated with the selected MCS table and the UE selects not to segment the RLC SDU

Proposal15: If the transmission with the selected grant cannot fulfill the remaining SL-PRS delay budget, resource selection/reselection is performed. [14/14] FFS the definition of the SL-PRS delay budget and its relationship with SL-PRS priority.

Resource allocation scheme 2: TX resource selection parameter related issues

Proposal16: The following legacy parameters are selected/reselected when the TX resource (re-)selection is triggered in the shared resource pool. [15/15]

(a) Resource reservation interval

(b) COUNTER value

(c) Number of HARQ retransmissions

(d) frequency resources within the range

Proposal17: The following parameters are selected/reselected when the TX resource (re-)selection is triggered in the dedicated resource pool. [15/15] FFS the number of retransmissions.

(a) resource reservation interval, when the transmission of multiple SL-PRS is triggered

(b) COUNTER value, when the transmission of multiple SL-PRS is triggered

Resource allocation Scheme 2: Priority for SL transmission with both data and SL-PRS

Proposal18: RAN2 to make the following working assumption: When both SL-SCH data are transmitted and SL-PRS are transmitted on shared resource pool, the priority that MAC indicates to PHY is the higher priority of the two. [14/14] Revisit the issue when SL-PRS priority is defined.

Proposal19: The priority of the data should follow the priority of PRS when there is only SL-PRS pending for transmission on shared resource pool. [13/14]

SL grant in dedicated resource pool

Proposal20: For a SL grant in dedicated resource pool, MAC layer selects the destination that has the highest priority of the SL PRS for transmission. [15/15]-

SL grant in shared resource pool:

Proposal21: For a SL Grant in shared resource pool, MAC layer selects the destination with the highest priority of the SL-PRS and SL-SCH data. [14/14] FFS the other criteria for destination selection in shared resource pool

Proposal23: If a SL PRS is transmitted in the SL grant in the shared pool, legacy LCP rules can be performed to construct MAC PDU associated with the SL grant after TBS is provided from PHY. [14/14]

Proposal24: If the selected destination only has pending SL PRS, the MAC entity should generate MAC PDU containing only padding MAC subPDU for the transmission along with SL-PRS. [14/14]

Collision handling

Proposal26: Collision handling between SL/UU for SL-PRS is based on the L1 priority. [13/14]

Proposal27: SL-PRS is prioritized over PUSCH/PUCCH when [13/14]

 The value of the priority of PUSCH/PUCCH is higher than a threshold, as in legacy

 The value of the priority of SL-PRS is lower than a threshold

[“Yellow” proposals for discussion]

Resource allocation in scheme 1: DG

Proposal1b: Send an LS to RAN1 that RAN2 has considered the following parameters related to PHY within the SL-PRS resource request MAC CE and ask RAN1 for down-selection:

 Bandwidth

 Number of symbols within a slot

 SL pattern information (e.g., comb size N, symbol length M)

 SL-PRS resource ID

Proposal1c: Leave the following parameters for SL-PRS resource request MAC CE for further discussion

 Delay budget [3]

 Type of resource pool (dedicated/shared) [1]

 Number of SL PRS resources [3]

 Resource reservation interval [2]

 Positioning session related:

 Indicator for one/multiple positioning sessions [1]

 One or multiple indices of positioning sessions [1]

 Time periods that the requested SL PRS resources to be valid [1]

 Required SL Pos. QoS including absolute/relative/ranging for distance/ranging for direction accuracy, positioning latency, etc. [1]

Resource allocation scheme 1: CG type 2

Proposal8: Decide on the issue of whether to reuse the legacy Sidelink Configured Grant Confirmation MAC CE when the CG configurations are provided by RAN1.

Resource allocation Scheme2: resource pool selection

Proposal10: RAN2 to further discussion whether to leave the resource pool selection to UE implementation when resource selection is triggered for SL-PRS transmission. [9/15] If not, further down-select from the following options:

 Option1: Select the dedicated resource pool first if dedicated resource pool is configured

 Option2: Select the resource pool based on pending transmission: if there is SL-SCH data and SL PRS pending, select the shared pool; if only SL PRS is pending, select the dedicated pool.

SL grant in shared resource pool:

Proposal22: When the destination of the shared resource pool is already selected when there are both SL-PRS and data pending for transmission SL PRS is only transmitted when the SL-SCH data with higher priority than the SL PRS is already allocated in the MAC PDU. [10/14]

DRX

Proposal25: DRX and dedicated resource pool for PRS transmission should not be configured together. [8/15]

Stage 3 SLPP proposals (considered in offline [401])

[R2-2309605](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309605%20SLPP%20and%20RRC%20Signaling%20Design%20for%20SL%20positioning.docx) SLPP and RRC Signaling Design for SL positioning CATT discussion Rel-18

[R2-2310014](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310014%20Discussion%20on%20sidelink%20positioning.docx) Discussion on sidelink positioning Spreadtrum Communications discussion Rel-18

[R2-2310194](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310194.docx) SLPP signalling and procedures MediaTek Inc. discussion Rel-18 NR\_pos\_enh2-Core

[R2-2310347](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310347-SL-POS-procedures-v1.docx) UE only SL positioning procedure Apple discussion Rel-18 NR\_pos\_enh2

[R2-2310691](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310691.docx) Discussion of SLPP / LPP signalling procedures Nokia Netherlands discussion Rel-18

[R2-2310912](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310912%20_%28SLPP%20Details%29.docx) Further Considerations on SLPP Design Qualcomm Incorporated discussion

* [AT123bis][401][POS] Progressing TS 38.355 (Intel)

 Scope: F2F offline on principles and TPs for 38.355, considering R2-2309605 / P21 of R2-2309759 / R2-2310014 / R2-2310194 / R2-2310347 / P8-P9 of R2-2310543 / R2-2310691 / R2-2310912 (not all proposals of all documents will be handled)

 Intended outcome: Report to Thursday CB session in R2-2311374

 Deadline: Wednesday 2023-10-11 1900 CST

 Schedule: Monday 2023-10-09 1700-1800 CST, in Brk3

Other documents

[R2-2309668](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309668%20Remaining%20issues%20on%20higher%20layer%20aspects%20for%20sidelink%20positioning.docx) Remaining issues on higher layer aspects for sidelink positioning vivo discussion Rel-18 FS\_NR\_pos\_enh2

Communication Model of SLPP protocol

Proposal 1: In the SLPP specification, further clarify that one of "Endpoint A" and "Endpoint B” should be positioning server (i.e., server UE or LMF).

UE-only Operation: Validity of anchor UE

Observation 1: If it is required that anchor UEs must be in the coverage of both target UE and server UE, there are fewer (or even no) valid anchor UEs, which impacts the positioning accuracy or even the availability of positioning. If anchor UEs only need to be in the coverage of target UE, the valid anchor UEs are more but SLPP forwarding via target UE may need to be supported.

Proposal 2: For UE-only Operation, RAN2 to discuss whether the selected anchor UEs must be in the coverage of both target UE and server UE, or just be in the coverage of target UE.

Proposal 3: For UE-only Operation, if selected anchor UEs are only required in the coverage of target UE, discuss whether SLPP forwarding is supported. If supported, the TP in the Annex can be considered as the baseline for further discussion.

UE-only Operation: SLPP Session ID

Proposal 4: For UE-only Operation, SLPP session ID contains the UE ID of the assigner of SLPP session ID and a sequence number. FFS which type of UE ID is used, e.g., UE application ID, Layer-2 ID.

Proposal 5: For UE-only Operation, one single SLPP session ID is used for message exchange between all the relevant UEs for one SLPP positioning, e.g., between server UE and target UE, between server UE and anchor UE1, between server UE and anchor UE2.

Network-based Operation: Session ID

Proposal 6: For Network-based Operation, RAN2 to discuss the following three alternatives regarding how LMF sets the field of SLPP session ID in SLPP message between LMF and UE:

 Alt 1: LMF may assign a separate SLPP session ID and include it in SLPP message;

 Alt 2: LMF may set SLPP session ID as the routing ID/correlation ID;

 Alt 3: the SLPP session ID is set to absent.

Procedure for Anchor UE selection

Proposal 7: Support the function of request/provide candidate anchor UE information via SLPP procedure. RAN2 to discuss the following two alternatives:

 Alt 1: introduce a new SLPP procedure;

 Alt 2: reuse the procedure of request/provide assistance data;

Metafield of Discovery message

Proposal 8: Confirm that RAN2 is responsible for defining the structure of metafield in the discovery message, i.e., the structure of metafield is defined in SLPP specification.

Proposal 9: RAN2 to define the individual metafield structures separately for Announcement message, Solicitaion message and Response message.

Proposal 10: The SLPP metafield in Annoucement message may include:

 UE role

 UE ID, e.g., Application ID

 Coverage status, i.e., in coverage or not

 Supported SL positioning method/measurement

 Mobility status, stationary or movable

 SL-PRS assistant data (e.g., sequence ID)

Proposal 11: The SLPP metafield in Solicitation message may include:

 Required UE role

 Required UE ID, e.g., Application ID

 Required coverage status, i.e., in coverage or not

 Required SL positioning method/measurement

 Required mobility status, i.e., Stationary or movable

Proposal 12: The SLPP metafield in Response message may include:

 UE role

 UE ID, e.g., Application ID

P9 only

[R2-2310217](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310217.docx) Further considerations on sidelink positioning Intel Corporation discussion Rel-18 NR\_pos\_enh2

Proposal 9: For both LMF involved and UE only based SL positioning operation, RAN2 discuss and agree that SLPP forwarding is not needed.

[R2-2310430](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310430%20Remaining%20issues%20on%20lower%20layer%20aspects%20for%20R18%20sidelink%20positioning%20.docx) Remaining issues on lower layer aspects for R18 sidelink positioning LG Electronics Inc. discussion Rel-18

Proposal 1. Two following options can be considered for 3-bits SL-PRS priority mapping/translation from 7/8-bits positioning QoS:

- Option 1. SL-PRS priority can be derived by following equations:

- For 7-bits accuracy, SL-PRS priority is floor(accuracy/16)

- For 8-bits accuracy, SL-PRS priority is floor(accuracy/32)

- Option 2. SL-PRS priority can be determined by configured thresholds

Proposal 2. Following fields in SL-PRS Resource Request MAC CE are used for aperiodic/one-shot SL-PRS transmission in Scheme 1:

- Destination

- SL-PRS ID (e.g. SLPP session ID and/or SL-PRS resource ID)

- SL-PRS size (Comb size and Symbol size)

Proposal 3. SL-PRSPatternInfo with SL-PRS-CombSize and SL-PRS-SymbolSize is used for periodic SL-PRS transmission in Scheme 1.

Proposal 4. RAN2 to capture the above TP for MAC PDU generation to send SCI-2D and MAC subheader in a shared resource pool.

Proposal 5. PSSCH decoding based SL-PRS retransmission is required in a shared resource pool.

Proposal 6. SL-PRS delay budget is considered as response time in positioning QoS. Resource selection/reselection due to SL-PRS delay budget should be left on UE implementation.

Proposal 7. SL-PRS is prioritized between signaling (SCCH, MAC CE) and traffic (STCH).

Proposal 8. When SL DRX is configured, the Active Time includes the time while:

- Option 1. the time during SLPP session operation (i.e. between creation and termination)

- Option 2. the time between SLPP request message and SLPP provide message

- Option 3. the time when a certain timer is running

Proposal 9. SL DRX can work in a dedicated resource pool with periodicity (i.e. on duration timer and inactivity timer) without HARQ RTT timer and retransmission timer.

Proposal 10. When SL DRX is configured, the Active Time includes the time while:

- the time between transmitting of SL-PRS and receiving of SL-PRS in SL RTT type positioning method

[R2-2309578](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309578_Sidelink_Fraunhofer.docx) UE Positioning using Sidelink Fraunhofer IIS, Fraunhofer HHI discussion

[R2-2309630](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309630%20Discussion%20on%20higher%20layer%20aspects%20for%20Sidelink%20Positioning_final.docx) Discussion on higher layer aspects for sidelink positioning Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2

[R2-2309631](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309631%20Discussion%20on%20lower%20layer%20aspects%20for%20sidelink%20positoining_final.docx) Discussion on lower layer aspects for SL positioning Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2

[R2-2309669](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309669%20Discussion%20on%20transmission%20and%20measurement%20of%20SL-PRS.docx) Discussion on transmission and measurement of SL-PRS vivo discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2309741](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309741-Further%20Discussions%20on%20Sidelink%20Positioning%20and%20Ranging.docx) Further discussion on SL positioning and ranging CEWiT discussion

[R2-2309759](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309759%20Discussion%20on%20SL%20positioning.doc) Discussion on SL positioning Xiaomi discussion Rel-18

[R2-2310044](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310044%20Discussion%20on%20UE%20assistance%20information%20for%20SL-PRS.doc) Discussion on UE assistance information for SL-PRS Samsung Electronics Co., Ltd discussion Rel-18 NR\_pos\_enh2

[R2-2310076](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310076%20%287.2.2%29%20open%20issue%20for%20SL%20POS%20.docx) Open issues regarding SLPP session Samsung Guangzhou Mobile R&D discussion

[R2-2310195](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310195.docx) SLPP information forwarding MediaTek Inc. discussion Rel-18 NR\_pos\_enh2-Core

[R2-2310217](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310217.docx) Further considerations on sidelink positioning Intel Corporation discussion Rel-18 NR\_pos\_enh2

[R2-2310275](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310275%20Considerations%20on%20Sidelink%20positioning.doc) Considerations on Sidelink positioning CMCC discussion Rel-18 NR\_pos\_enh2

[R2-2310379](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310379%20Further%20discussion%20on%20sidelink%20positioning.docx) Further discussion on sidelink positioning OPPO discussion Rel-18 NR\_pos\_enh2

[R2-2310429](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310429%20Remaining%20issues%20on%20higher%20layer%20aspects%20for%20R18%20sidelink%20positioning.docx) Remaining issues on higher layer aspects for R18 sidelink positioning LG Electronics Inc. discussion Rel-18

[R2-2310436](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CDocs%5CR2-2310436.zip) Discussion on sidelink positioning InterDigital, Inc. discussion Rel-18 NR\_pos\_enh2-Core

[R2-2310541](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310541%20Discussion%20on%20lower-layer%20related%20sidelink%20positioning.docx) Discussion on lower-layer related sidelink positioning ZTE Corporation discussion Rel-18 NR\_pos\_enh2

[R2-2310543](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310543%20Discussion%20on%20sidelink%20positioning.docx) Discussion on sidelink positioning ZTE Corporation discussion Rel-18 NR\_pos\_enh2

[R2-2310680](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310680.docx) Discussion of resource allocation aspects Nokia Netherlands discussion Rel-18

[R2-2310759](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310759_SL_Pos_Res.docx) Considerations on multiplexing, congestion control and ARP Sony discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2310789](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310789_SLPosDiscussion.docx) SL Positioning Discussion Lenovo discussion Rel-18

R2-2310833 Further discussion on sidelink positioning ROBERT BOSCH GmbH discussion Rel-18 Late

[R2-2310848](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310848.docx) Discussion of session management for SL positioning Nokia Netherlands discussion Rel-18

[R2-2310856](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310856%20SL.docx) Remaining issue for NW involved Sidelink positioning Ericsson discussion Rel-18

[R2-2311032](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311032_On%20sidelink%20positioning%20discovery%20and%20cap%20exchange.docx) On sidelink positioning discovery and capabilities exchange Philips International B.V. discussion NR\_pos\_enh2

[R2-2311035](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311035_On%20the%20stability%20of%20Anchor%20UE%20Location.doc) On the stability of Anchor UE location Philips International B.V. discussion NR\_pos\_enh2

### 7.2.3 RAT-dependent integrity

Error modelling parameters, signalling, and procedures to support UE-based and LMF-based integrity of RAT-dependent positioning methods.

[R2-2309924](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309924%20Discussion%20on%20RAT-dependent%20integrity.doc) Discussion on RAT-dependent integrity Lenovo discussion Rel-18

Proposal 1: The identified signalling used for integrity information transmission can be reused for the beam related error source for DL-AOD positioning.

Proposal 2: In the case of UE-based integrity, LMF may indicate unavailability of Assistance Data Error sources, in case requested one or more assistance data error source information are unavailable at LMF.

Proposal 3: NG-RAN may monitor and check the TRP state periodically or requested by LMF to update the TRP information. Detailed aspects for the TRP information update are in RAN3 scope.

Proposal 4: For UE-based RAT-dependent integrity, the achievable TIR reporting from UE to LMF is applied for both Mode 1 and Mode 2 reporting if supported.

Proposal 5: For UE-based integrity, RAN2 to support the error reporting with a failure cause from UE to LMF in the case that UE fails to calculate the integrity results.

[R2-2310415](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310415%20Discussion%20on%20RAT-dependent%20positioning%20integrity.doc) Discussion on RAT-dependent positioning integrity Xiaomi discussion.

Proposal 1: RAN2 don’t introduce any signalling on supporting Beam-related information (Beam Bore-Sight Direction and Beam Antenna Information) error sources in Rel-18.

Proposal 2: The UE capability on UE supporting the DNU flag (NR-Integrity-ServiceAlert) should be defined respectively for DL-TDOA and DL-AoD.

Proposal 3: The UE capability on UE supporting the inter TRP synchronization error source and TRP location error source should be defined for DL-TDOA and DL-AoD.

[R2-2310380](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310380%20Consideration%20on%20RAT-dependent%20positioning%20integrity.docx) Consideration on RAT-dependent positioning integrity OPPO discussion Rel-18 NR\_pos\_enh2

[R2-2310823](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310823%20R18%20NR%20POS%20A723%20RAT%20dependent%20integrity.doc) Discussion on RAT dependent integrity InterDigital Inc. discussion Rel-18

[R2-2310857](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310857%20Integrity.docx) Support for UE-based integrity Ericsson discussion Rel-18

[R2-2310914](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310914_%28integrity%29.docx) Remaining Issues for Integrity of NR Positioning Technologies Qualcomm Incorporated discussion

[R2-2310996](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310996%20Positioning%20Integrity.docx) Signalling about beam related information for positioning integrity Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_pos\_enh2-Core

### 7.2.4 LPHAP

Enhancements for enabling LPHAP use case 6 (TS 22.104), including extending eDRX cycle (coordinated with RedCap WI); SRS configuration enhancements based on validity area for UEs in RRC\_INACTIVE; DL-PRS measurements in RRC\_IDLE and reporting in RRC\_CONNECTED; and alignment between eDRX and PRS configurations.

[R2-2309606](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309606%20Discussion%20on%20LPHAP.docx) Discussion on LPHAP CATT discussion Rel-18

SRS configuration with validity area

#Issue 1: RSRP based TA validation for LPHAP

Proposal 1: Wait for the progress in RAN1 on the reference RS for the current RSRP derivation for TA validation.

#Issue 2: area-specific SRS configuration

Proposal 2: Introduce an autonomous TA adjustment enabler in the area-specific SRS configuration. If configured by the network, subject to UE capability, UE autonomously adjusts the TA, when cell-reselection happens.

#Issue 3: SRS configuration request and activation indication

Proposal 3: Confirm the WA that a new resume cause is introduced for SRS configuration request from the perspective of POS WI. Inform it in the main session.

Proposal 4: The same indication can be used for SRS configuration request and activation indication.

#Issue 4: Validity for SRS configuration

Proposal 5: Exclude the option of using inactivePosSRS-ValidityArea-TAT to release the SRS configuration.

Proposal 6: Introduce a separate validity time to control how long the SRS resource is reserved for the UE within the validity area. When the new validity time expires, the UE releases the SRS.

Proposal 7: Send an LS to RAN3 on the introduction of validity time for SRS configuration.

#Issue 5: Preconfigured SRS

Proposal 8: Confirm that pre-configure SRS means the network preconfigured multiple validity areas, and the SRS configuration for each validity area can reuse the structure of SRS-PosRRC-InactiveValidityAreaConfig.

Proposal 9: Postpone the discussion on the mechanisms of preconfigured SRS until the concept of the preconfigured SRS is clarified.

#Issue 6: The over listening issue of gNBs

Proposal 10: Introduce an indication for UE to indicate the network start listening to the SRS.

Proposal 11: The indication for UE to indicate the network start listening to the SRS can be a dedicate preamble for positioning feature.

Alignment between PRS and (e)DRX

Proposal 12: Introduce another expected periodicity of PRS in the On-Demand PRS request in LPP Request Assistance Data message. Each of the expected periodicities is associated with an offset.

on the LSs from RAN1/RAN4/SA2

Proposal 13: Confirm that the eRedCap agreed eDRX cycle lengths are sufficient for positioning in RRC\_INACTIVE.

Proposal 14: Extend the value of SRS/PRS periodicity and offset in RRC and LPP spec to support PRS/SRS periodicity larger than 10240ms.

Proposal 15: RAN2 confirms that reporting positioning measurements taken in RRC\_IDLE is supported with using the existing LPP reporting procedure.

Proposal 16: Send a reply LS to SA2 to indicate that RAN2 will use the existing LPP procedures to report the measurements taken in RRC\_IDLE. The draft reply LS in R2-2309597 can be taken as baseline.

[R2-2310381](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310381%20Discussion%20on%20the%20leftover%20issues%20of%20LPHAP%20enhancement.docx) Discussion on the leftover issues of LPHAP enhancement OPPO discussion Rel-18 NR\_pos\_enh2

Proposal 1 Alignment of (e)DRX to fixed PRS is NOT supported.

Proposal 2 LMF-initialized on-demand PRS request procedure is NOT supported for the alignment of the PRS configuration to the fixed (e)DRX configuration, relying on UE-initiated procedures instead.

Proposal 3 Regarding enhancements on the current UE-initiated on-demand PRS request message for alignment of PRS to the fixed (e)DRX, RAN2 to discuss the following two ways forward:

- Option 1: to enhance the DL-PRS configuration itself to be included in the on-demand PRS request message

- Option 2: to include the LPHAP indication and UE-related (e)DRX information in the on-demand PRS request message

Proposal 4 RAN2 to agree to include the LPHAP indication and UE-related (e)DRX information in the on-demand PRS request message.

Proposal 5 RAN2 to agree that the PRS periodicity is extended to be larger than 10240ms to suit the eDRX cycle value for eDRX paging cycle in RRC\_INACTIVE and/or RRC\_IDLE. FFS the specific values among hf2, hf4, hf8, hf16, hf32, hf64, hf128, hf256, hf512, hf1024.

Proposal 6 RAN2 NOT to pursue the enhancement to extend SRS periodicity larger than 10240 ms.

Proposal 7 RAN2 to confirm that it is feasible for a UE that performs DL PRS measurements in RRC\_IDLE and reports the measurements in RRC\_CONNECTED via LPP message. No stage-3 spec impact in RAN2 is foreseen.

Proposal 8 UE releases the SRS (pre)configuration when the area-specific TA timer expires.

Proposal 9 UE releases the SRS (pre)configuration when UE reselects to a cell out of the SRS validity area.

Proposal 10 UE releases the SRS (pre)configuration upon the reception of RRCSetup/RRCResume/ RRCRelease without suspendConfig.

Proposal 11 RAN2 to confirm WA as “A new resume cause is introduced for both SRS configuration request and the activation indication of the pre-configured SRS”.

Proposal 12 It is up to NW implementation to distinguish between SRS configuration request and the activation indication of the pre-configured SRS.

Proposal 13 RAN2 NOT to support multiple SRS (pre)configurations for one validity area.

Proposal 14 RAN2 NOT to support multiple validity areas for the same cell.

Proposal 15 Only periodic SRS is supported for pre-configured SRS.

Proposal 16 Two separate UE capabilities are introduced for supporting SRS with validity area in RRC\_INACTIVE and supporting SRS pre-configuration in RRC\_INACTIVE respectively.

Proposal 17 RAN2 sticks to using a list of CGIs to define the validity area, and replies LS to inform RAN1.

Proposal 18 Regarding the reference RS for the current RSRP derivation, RAN2 relies on RAN1 to make decision, or leaves it to UE implementation.

[R2-2309579](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309579_LPHAP_Fraunhofer.docx) Reliable LPHAP position with extended DRX cycle Fraunhofer IIS, Fraunhofer HHI discussion

[R2-2309629](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309629%20Discussion%20on%20LPHAP_final.docx) Discussion on LPHAP Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2

[R2-2309670](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309670%20Remaining%20issues%20of%20LPHAP.doc) Remaining issues of LPHAP vivo discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2309922](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309922_Discussion%20on%20alignment%20between%20%28e%29DRX%20and%20PRS.docx) Discussion on alignment between (e)DRX and PRS Samsung discussion Rel-18 NR\_pos\_enh2

[R2-2309923](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309923_Discussion%20on%20SRS%20configuration%20in%20RRC_INACTIVE.docx) Discussion on SRS configuration in RRC\_INACTIVE Samsung discussion Rel-18 NR\_pos\_enh2

[R2-2309925](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309925%20Discussion%20on%20low%20power%20high%20accuracy%20positioning.doc) Discussion on low power high accuracy positioning Lenovo discussion Rel-18

[R2-2310223](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310223%20LPHAP.docx) Further considerations on LPHAP Intel Corporation discussion Rel-18 NR\_pos\_enh2

[R2-2310276](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310276%20Further%20considerations%C2%A0on%C2%A0LPHAP.doc) Further considerations on LPHAP CMCC discussion Rel-18 NR\_pos\_enh2

[R2-2310416](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310416%20Discussion%20on%20LPHA%20positioning.doc) Discussion on LPHA positioning Xiaomi discussion

[R2-2310540](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310540%20Discussion%20on%20LPHAP.docx) Discussion on LPHAP ZTE Corporation discussion Rel-18 NR\_pos\_enh2

[R2-2310760](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310760_LPHAP.docx) Considerations on Low Power High Accuracy Positioning Sony discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2310824](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310824%20R18%20NR%20POS%20A724%20LPHAP.doc) Discussion on LPHAP InterDigital Inc. discussion Rel-18

[R2-2310858](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310858%20LPHAP.docx) Remaining issue on Low Power High Accuracy Positioning Ericsson discussion Rel-18

[R2-2310915](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310915_%28LPHAP%29.docx) Remaining issues for LPHAP Qualcomm Incorporated discussion

### 7.2.5 RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning

RAN1 led objectives that may require progress in RAN1 before RAN2 can take decisions.

Including report of [Post123][402][POS] RAN2 impact of RAN1-led positioning objectives (Nokia)

Email discussion report

[R2-2310998](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310998%20%5BPost123%5D%5B402%5D%20RAN2%20impact%20of%20RAN1-led%20positioning%20objectives_v13_Rapp.docx) [Post123][402][POS] RAN2 impact of RAN1-led positioning objectives (Nokia) Nokia, Nokia Shanghai Bell report Rel-18 NR\_pos\_enh2-Core

Proposal 1: For Multi-RTT positioning, if requested by LMF, the UE reports the RSCP measurement along with the UE Rx-Tx time difference measurement. Extend NR-Multi-RTT-SignalMeasurementInformation IE and add DL RSCP measurement as an optional measurement quantity to be reported along with nr-UE-RxTxTimeDiff measurement.

Proposal 1a: Extend NR-Multi-RTT-SignalMeasurementInformation IE to include a timestamp associated with the reported DL RSCP measurement and a quality indication for the reported RSCP measurement.

Proposal 2: For DL-TDOA positioning, if requested by LMF, the UE reports RSCPD measurement along with the RSTD measurement. Extend NR-DL-TDOA-SignalMeasurementInformation IE and add DL RSCPD measurement as an optional measurement quantity to be reported along with nr-RSTD measurement.

Proposal 2a: Extend NR-DL-TDOA-SignalMeasurementInformation IE to include a timestamp associated with the reported DL RSCPD measurement and a quality indication for the reported RSCPD.

Proposal 3: Update the field description for nr-los-nlos-Indicator in NR-DL-TDOA-SignalMeasurementInformation IE to clarify that the indication applies also to the RSCPD measurement associated with the RSTD measurement in the reported DL-TDOA measurement.

Proposal 4: Update the field description for nr-los-nlos-Indicator in NR-Multi-RTT-SignalMeasurementInformation IE to clarify that the indication applies also to the RSCP measurement associated with the UE Rx-Tx time difference measurement in the reported Multi-RTT measurement.

Proposal 5: For UE-assisted DL-TDOA positioning, to support Simultaneous measurement by target UE and PRU, extend the NR-DL-TDOA-RequestLocationInformation IE to be able to request RSCPD measurement.

Proposal 6: For UE-assisted Multi-RTT positioning, to support Simultaneous measurement by target UE and PRU, extend the NR-Multi-RTT-RequestLocationInformation IE to be able to request RSCP measurement.

Proposal 7: Extend the NR-DL-TDOA-RequestLocationInformation IE and NR-Multi-RTT-RequestLocationInformation IE to include time window(s) configuration and DL PRS resource sets occurring within the indicated time window(s).

Proposal 7a: Each time window configuration in Request Location Information IE contains the following: Start of time window, Duration of time window, Periodicity of time window (Optional). The number of time windows is configurable and signalled as part of the time window configuration.

Proposal 8: For UE-based DL-TDOA positioning, extend the NR-DL-TDOA-ProvideAssistanceData IE to include the following PRU related information: reference RSCPD measurement reported by PRU, timestamp associated with the reference RSCPD measurement, and PRU location information.

Proposal 9: Support RedCap UEs capable of DL PRS Rx frequency hopping, hopping within a single PRS resource of a TRP under one positioning frequency layer, to report positioning measurement in LPP Provide Location Information message with an indication whether the reported measurement is based on multiple hops or a single hop.

Proposal 10: Enhance the NR-DL-TDOA-RequestLocationInformation IE and NR-Multi-RTT-RequestLocationInformation IE as follows:

- add a field indicating the UE needs to perform joint measurement across aggregated PFLs.

- indicate the DL PRS resource sets IDs from two or three different PFLs that are linked for DL PRS BW aggregation that UE needs to use for the joint measurement.

- extend the NR-DL-TDOA-ReportConfig IE and add a new timingReportingGranularityFactor-Ext-r18 field with values {-1, -2}. Other values FFS.

- introduce a new NR-Multi-RTT-ReportConfig-Ext-r18 IE add a new timingReportingGranularityFactor-Ext-r18 field with values {-1, -2}. Other values FFS.

Proposal 11: To support PRS BW aggregation, enhance the PRS configuration assistance data provided in NR-DL-PRS-AssistanceData IE in the Provide Assistance Data message for DL-TDOA and multi-RTT positioning to provide linkage information between PRS resource sets from a TRP for two or three PFLs.

Proposal 12: Extend the NR-DL-TDOA-SignalMeasurementInformation IE and add a new field to indicate whether the reported RSTD/RSRP/RSRPP measurement is a joint measurement or not.

Proposal 13: Extend the NR-Multi-RTT-SignalMeasurementInformation IE and add a new field to indicate whether the reported UE Rx-Tx time difference/RSRP/RSRPP measurement is a joint measurement or not.

Proposal 14: RAN2 to note the impact analysis and the issues identified for further study i.e., FFS items in Table 1, Table 2, and Table 3 in R2-2310998.

Other documents

[R2-2309926](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309926%20Discussion%20on%20RedCap%2C%20carrier%20phase%20positioning%20and%20PRS%2CSRS%20bandwidth%20aggregation.doc) Discussion on RedCap positioning, carrier phase positioning and PRS/SRS bandwidth aggregation Lenovo discussion Rel-18

Redcap Positioning:

Proposal 1: LMF may request gNB to provide PRS FH configuration and then indicates the determined PRS FH configuration to UE by LPP ProvideAssistanceData message.

Proposal 2: LMF may request serving gNB to provide the SRS FH configuration with SRS configuration to UE and feedback the SRS FH configuration to LMF.

Proposal 3: UE performs hop switch or BWP switch autonomously according to the configuration from network.

Carrier phase positioning:

Observation 1: RAN1 has identified the support of RSCP and RSCPD measurement, and a UE/TRP needs to report the carrier phase measurements together with the legacy positioning measurements to LMF.

Proposal 4: UE indicates the support of carrier phase positioning in LPP ProvideCapabilities message, and further includes the support of RSCP or RSCPD measurement.

Proposal 5: The legacy LPP RequestLocationInformation and ProvideLocationInformation message for time-based positioning are enhanced to carry the CPP measurement configuration and CPP measurement reporting.

Proposal 6: For double differential UL RSCP measurement, LMF indicates the time period of SRS transmission to the serving gNB of UE including target UE and PRU by enhancing current requested UL-SRS transmission characteristics information for UL positioning.

Proposal 7: For double differential DL RSCP and RSCPD measurements, LMF indicates the time period for PRS measurement to target UE and PRU by LPP provide assistance data message.

Proposal 8: Support LPP location server and target UE error cause signalling for DL Carrier phase positioning.

PRS/SRS bandwidth aggregation:

Proposal 9: An aggregation ID is used to identify the aggregated PRS resources across different carriers in pre-defined on-demand PRS configurations from LMF to UE. UE may initiate the on-demand PRS request which includes the aggregation ID for specific PRS bandwidth aggregation resource sets.

Proposal 10: RAN2 is suggested to discuss the reuse of legacy SP positioning SRS activation/deactivation MAC CE as possible to activate/deactivate the aggregated SRS resource sets simultaneously.

Proposal 11: DL positioning procedure for RRC\_INACTIVE or RRC\_IDLE state is reused to support PRS bandwidth aggregation and should be captured in stage 2 specification.

Proposal 12: RRCRelease message is enhanced to carry aggregated SRS resource set IDs across different carriers with SRS configurations to support the SRS bandwidth aggregation in RRC\_INACTIVE state.

[R2-2309607](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309607%20Discussion%20on%20bandwidth%20aggregation%20for%20positioning.docx) Discussion on bandwidth aggregation for positioning CATT discussion Rel-18

[R2-2309608](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309608%20LPP%20and%20RRC%20impacts%20to%20enable%20Carrier%20Phase%20Positioning.docx) LPP and RRC impacts to enable Carrier Phase Positioning CATT discussion Rel-18

[R2-2309671](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309671%20RAN2-related%20issues%20about%20bandwidth%20aggregation.docx) RAN2-related issues about bandwidth aggregation vivo discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2309893](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309893%20Discussion%20on%20RAN1%20led%20positioning%20topics.docx) Discussion on RAN1 led positioning topics Huawei, HiSilicon discussion

[R2-2310346](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310346-on-demand-prs-aggregation-v0.docx) On PRS bandwidth aggregation Apple discussion Rel-18 NR\_pos\_enh2

[R2-2310417](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310417%20Discussion%20on%20carrier%20phase%20positioning%20and%20bandwidth%20aggregation%20for%20positioning.doc) Discussion on carrier phase positioning and bandwidth aggregation for positioning Xiaomi discussion

[R2-2310542](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310542%20Discussion%20on%20BW%20aggregation%20and%20RedCap%20positioning.docx) Discussion on BW aggregation and RedCap positioning ZTE Corporation discussion Rel-18 NR\_pos\_enh2

[R2-2310761](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310761_RedCap.docx) Discussion on Frequency hopping for Positioning for RedCap Ues Sony discussion Rel-18 FS\_NR\_pos\_enh2

[R2-2310825](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310825%20R18%20NR%20POS%20A725%20Others.doc) Discussion on positioning for RedCap positioning, carrier phase positioning, and bandwidth aggregation for positioning InterDigital Inc. discussion Rel-18

[R2-2310859](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310859%20RAN1LedTopic.docx) Discussion based upon RAN1 agreements on CPP, RedCap, Bandwidth aggregation Ericsson discussion Rel-18

[R2-2310916](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310916_%28PRS%20Aggregation%29.docx) Configuration Enhancements for DL-PRS Aggregation Qualcomm Incorporated discussion

## 7.9 Enhanced NR Sidelink Relay

(NR\_SL\_relay\_enh-Core; leading WG: RAN2; REL-18; WID: [RP-223501](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_98e/Docs/RP-223501.zip))

Time budget: 1.5 TU

Tdoc Limitation: 4 tdocs

### 7.9.1 Organizational

Including incoming LSs and rapporteur inputs.

Open issues document

[R2-2309755](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309755%20remaining%20open%20issues%20for%20SL%20relay.docx) Report of [Post123][Relay] Remaining open issues (LG) LG Electronics France report Rel-18 NR\_SL\_relay\_enh-Core

* Noted

Running CRs

[R2-2309683](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309683%20-%20Running%20CR%20of%20TS%2038.351%20for%20SL%20Relay%20enhancement.docx) Running CR of TS 38.351 for SL Relay enhancement OPPO draftCR Rel-18 38.351 17.6.0 B NR\_SL\_relay\_enh-Core

[R2-2309911](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309911_38.331_CR%234317_Rel-18_SL_relay_service_continuity.docx) Introduction of Rel-18 SL relay service continuity MediaTek Inc CR Rel-18 38.331 17.6.0 4317 - B NR\_SL\_relay\_enh-Core

[R2-2310166](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310166%20Draft%2038.323%20running%20CR%20for%20enhanced%20NR%20sidelink%20relay.docx) Draft 38.323 running CR for enhanced NR sidelink relay InterDigital discussion Rel-18 NR\_SL\_relay\_enh-Core

R2-2310359 Running CR of TS 38.321 for SL Relay enhancement Apple draftCR Rel-18 38.321 17.6.0 B NR\_SL\_relay\_enh-Core Late

[R2-2310484](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310484%20RRC%20running%20CR%20for%20Rel-18%20multi-path%20support.docx) RRC running CR for Rel-18 multi-path support Huawei, HiSilicon draftCR Rel-18 38.331 17.6.0 B NR\_SL\_relay\_enh-Core R2-2309310

[R2-2310485](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310485%20RRC%20open%20issues%20for%20Rel-18%20Multi-path.docx) RRC open issues for Rel-18 Multi-path Huawei, HiSilicon discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2311025](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311025%20-%2038.304_draftCR_Introduction%20of%20Rel-18%20support%20for%20SL%20Relay%20Enhancements.docx) Introduction of Rel-18 support for SL Relay Enhancements Ericsson España S.A. draftCR Rel-18 38.304 17.6.0 B NR\_SL\_relay\_enh

* Revised in R2-2311256

[R2-2311256](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311256%20-%2038.304_draftCR_Introduction%20of%20Rel-18%20support%20for%20SL%20Relay%20Enhancements.docx) Introduction of Rel-18 support for SL Relay Enhancements Ericsson España S.A. draftCR Rel-18 38.304 17.6.0 B NR\_SL\_relay\_enh

[R2-2311264](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311264_Introduction%20of%20NR%20sidelink%20U2U%20relay.docx) Introduction of NR sidelink U2U relay vivo draftCR Rel-18 38.331 17.6.0 B NR\_SL\_relay\_enh-Core

* [AT123bis][408][Relay] SRAP CR (OPPO)

 Scope: Check and update the Rel-18 relay CR to 38.351.

 Intended outcome: Endorsable CR

 Deadline: Thursday 2023-10-12 2000 CST

* [AT123bis][409][Relay] Relay RRC CR on service continuity (MediaTek)

 Scope: Check and update the Rel-18 relay CR to 38.331 on service continuity.

 Intended outcome: Endorsable CR

 Deadline: Thursday 2023-10-12 2000 CST

* [AT123bis][410][Relay] Relay PDCP CR (InterDigital)

 Scope: Check and update the Rel-18 relay CR to 38.323.

 Intended outcome: Endorsable CR

 Deadline: Thursday 2023-10-12 2000 CST

* [AT123bis][411][Relay] Relay MAC CR (Apple)

 Scope: Check and update the Rel-18 relay CR to 38.321.

 Intended outcome: Endorsable CR

 Deadline: Thursday 2023-10-12 2000 CST

* [AT123bis][412][Relay] Relay RRC CR on multi-path (Huawei)

 Scope: Check and update the Rel-18 relay CR to 38.331 on multi-path relay.

 Intended outcome: Endorsable CR

 Deadline: Thursday 2023-10-12 2000 CST

* [AT123bis][413][Relay] Relay idle mode CR (Ericsson)

 Scope: Check and update the Rel-18 relay CR to 38.304.

 Intended outcome: Endorsable CR

 Deadline: Thursday 2023-10-12 2000 CST

* [AT123bis][414][Relay] Relay RRC CR on UE-to-UE (vivo)

 Scope: Check and update the Rel-18 relay CR to 38.331 on UE-to-UE relay.

 Intended outcome: Endorsable CR

 Deadline: Thursday 2023-10-12 2000 CST

### 7.9.2 UE-to-UE relay

Single-hop Layer-2 and Layer-3 UE-to-UE relay for unicast. Including common L2/L3 functionality comprising relay discovery and (re)selection and L2-specific functionality including adaptation layer design, control plane procedures, and QoS handling if needed.

Including report of [Post123][406][Relay] Local ID in SRAP (OPPO)

Email discussion report

[R2-2309905](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309905%20-%20Summary%20of%20%5BPost123%5D%5B406%5D%5BRelay%5D%20Local%20ID%20in%20SRAP%20%28OPPO%29.docx) Summary of [Post123][406][Relay] Local ID in SRAP (OPPO) OPPO discussion Rel-18 NR\_SL\_relay\_enh-Core

Proposal 1 [15/19] For SRAP header in U2U Relay, the UE ID size is 8bits for each UE (i.e., 16 bits for the E2E UE pair).

Discussion:

Apple would like to keep the SRAP header size the same, but they can accept the majority view.

Proposal 2 [19/20] For SRAP header in U2U Relay, the Bearer ID size is 5bits. FFS how to derive 5-bit value BEARER ID from SLRB configuration index

Proposal 3 [20/20] The Local UE ID of the U2U Remote UE is assigned before E2E SL-SRBs transmission.

Proposal 4 [21/24] RAN2 to discuss using PC5-RRC message to indicate the Local ID from relay UE to Remote UEs, FFS on how the Local ID is link to User Info at the remote UE. FFS on reuse old PC5-RRC signaling or new PC5-RRC signalling

Discussion:

Apple think on the FFS in P2, we might be able to use the LCID rather than deriving from the configuration index; the Tx UE will determine the LCID based on implementation.

NEC think on P4, the RRCReconfigurationSidelink message could be reused.

vivo agree with Apple that the LCID can work, but we already agreed to use the configuration index to derive the bearer ID as the security input; they also agree with NEC on P4.

OPPO are not sure the LCID can work in P2, because we indicated to SA3 that the configuration index will be used. Huawei agree with OPPO. ZTE have the same view and think the LCID does not work to configure the E2E configurations. Lenovo also agree.

OPPO can accept if there is a majority view for using the RRCReconfigurationSidelink in P4, but they think the signalling model here is different, with the message coming from the Rx UE to the Tx UE.

Proposal 5 [ToDis] If PC5-RRC message is to be used to indicate the Local ID to remote UE, RAN2 to discuss how to link the User Info with Local ID:

Option-1: Carry User Info and Local ID in PC5-RRC message with the assumption that User Info is provided from Prose layer to AS layer;

Option-2: Carry L2 ID and Local ID in PC5-RRC message with the assumption that the association between User Info and L2 ID is done at Prose layer.

Discussion:

NEC prefer option 2 because the AS layer has historically not known about the user info.

Apple think option 2 does not work: The remote UE will not understand what is intended, and they think option 1 can be done without any new signalling.

ZTE prefer option 2 for the same reason as NEC. They agree that there will be spec impact: The relay UE needs to tell the L2ID of the target UE to the source UE, but they understand that SA2 should be able to accommodate this.

CATT agree with ZTE, and they think Apple are assuming too restricted a scenario.

Qualcomm agree with Apple that the L2IDs are not known between the remote UEs. They are not sure that the impact of option 2 would be acceptable to SA2 considering that they closed the WI.

Lenovo note that the L2ID is optional, and if we have option 2 it would need to change to mandatory.

OPPO understand that the L2ID currently in PC5-S is the ID of the target UE, and here we are discussing the ID of the source UE itself.

Apple have the same understanding as OPPO; they think SA2 discussed a CR related to this and did not want to adopt it, and we should not impose a design requirement on them.

Samsung think SA2 can do it as maintenance.

Qualcomm think this is a substantive technical issue and option 1 can work without impacting SA2. NEC think there will need to be inter-layer information exchanges anyway.

vivo think we should look at the RAN2 spec impact as well; they think it is reasonable to ask SA2 if option 2 is acceptable. Chair thinks there may not be time to turn around an LS exchange. Samsung think we should decide here.

Apple think option 1 is easy and has minimal spec impact, and would allow us to proceed without depending on SA2.

Ericsson have a slight preference to option 1, but they wonder if we could check internally for one more meeting cycle.

Show of hands:

Option 1 (user info from ProSe layer to AS layer): 6

Option 2 (association at ProSe layer): 13

Qualcomm are not sure option 2 is feasible in SA2; they would like to ask SA2 about the impact of the two options and if they have a preference. OPPO think we could take a WA and notify SA2 of RAN2 preference; otherwise we will be missing functionality next meeting. vivo agree with OPPO. LG think we should indicate that we need to close the WI and an early reply is appreciated, and we can mention option 1 as an alternative in case SA2 have a problem with option 2. Samsung think we should be clear about RAN2 preference and allow SA2 to comment on feasibility.

CATT think we do not need to send an urgent LS, because SA2 will not have time to process it in this meeting cycle anyway. They would prefer not to include option 1 as it has minority support in RAN2; anyway they think SA2 will check our minutes. OPPO agree that we should not include option 1, or at least not invite SA2 to express a preference; we could mention it as a backup only, if at all. Qualcomm think option 1 has no technical problem from RAN2 perspective.

LG think we could not indicate option 1 to SA2, but assume from RAN2 side that we will use it if SA2 object to option 2.

NEC think SA2 are trying to prevent the AS from knowing the user info.

Proposal 6 Send LS to SA2 on the RAN2 conclusion on Proposal 4 and Proposal 5.

Proposal 7 [20/20] The UE ID assignment for U2U remote UEs is up to U2U relay UE implementation, i.e., no specification impact on how to assign the local ID is needed.

Agreements:

For SRAP header in U2U Relay, the UE ID size is 8bits for each UE (i.e., 16 bits for the E2E UE pair).

For SRAP header in U2U Relay, the Bearer ID size is 5bits. FFS how to derive 5-bit value BEARER ID from SLRB configuration index.

The Local UE ID of the U2U Remote UE is assigned before E2E SL-SRBs transmission.

Reuse RRC ReconfigurationSidelink to indicate the Local ID pair from relay UE to Remote UEs.

WA: Carry L2 ID and Local ID in RRCReconfigurationSidelink message with the assumption that the association between User Info and L2 ID is done at ProSe layer.

LS to SA2 to indicate the above WA and ask SA2 to implement it if feasible. If not, RAN2 intend to adopt option 1, but the details do not need to be included in the LS. RAN2 intend to implement according to the WA in RAN2#124, and if SA2 indicate it is not feasible, it can be handled in maintenance.

The UE ID assignment for U2U remote UEs is up to U2U relay UE implementation, i.e., no specification impact on how to assign the local ID is needed.

* [AT123bis][420][Relay] LS to SA2 on L2ID and user info (LG)

 Scope: Draft an LS to SA2 (Cc: CT1) indicating the RAN2 WA on association between user info and L2ID and inquiring as to its feasibility.

 Intended outcome: Approvable LS

 Deadline: Wednesday 2023-10-11 2000 CST

P3/P4/P5/P6/P7/P8

[R2-2310405](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310405-Remaining%20issues%20for%20U2U%20relay.docx) Remaining issues for U2U relay operation LG Electronics Inc. discussion Rel-18

Proposal 3: We prefer to use AS signalling for QoS splitting.

Discussion:

CMCC wonder if this means RRCReconfigurationSidelink.

Qualcomm understand that the proposal is to put the QoS profile in AS signalling; they have a concern about putting upper-layer information in AS. They think we do not need new parameters and PC5-S already carries the QoS split information.

OPPO understand PC5-S can be reused directly in L3, but for L2 the QoS split needs to be done after link establishment. Qualcomm think the same PC5-S message can still be reused.

ASUSTeK agree with Qualcomm.

InterDigital wonder if the network would be involved in the split; if so, AS signalling would seem to make sense.

Apple support the proposal; regarding Qualcomm’s comment, they do not see a big problem with including this configuration in AS signalling.

Ericsson slightly prefer using PC5-S signalling.

Huawei prefer AS signalling to avoid making SA2 define related procedures; SA2 already left this up to RAN2. Samsung also support the proposal and agree with Huawei that we do not know if we can reuse the PC5-S procedure.

CATT think QoS profile in AS signalling is not new; there is already a PC5 QoS profile in the RRCReconfigurationSidelink.

ZTE prefer to use PC5-S because it already works for L3. CATT understand that SA2 clearly left this to us.

Qualcomm understand that SA2 left it to us because of limited time. They would like to send an LS to SA2 to ask if PC5-S works. Nokia think there is not enough time, and it was left to us.

Ericsson think the LS from SA2 did not explicitly leave us all the work, but SA2 considered that the L3/L2 specific aspects were under RAN2 purview. They think implementing this in AS would duplicate functionality between layers.

InterDigital understood that SA2 left us the full mandate to do the design.

LG agree with InterDigital that SA2 left it to be specified by RAN2.

Qualcomm think the LS left it open that we can indicate if anything needs to be done by SA2.

Ericsson think new signalling in AS would require nontrivial work, and using PC5-S means RAN2 do not have to do anything, but if SA2 reject it we will have to do something.

Xiaomi agree with Ericsson and think we could include this topic in the previously allocated LS.

Samsung are not sure how we can check the WA. OPPO understand from SA2 colleagues that the PC5-S message from remote UE to relay UE for L2 cannot include the QoS split information; they think we could give time to check internally and come back. Ericsson wonder if there is a technical reason why it would not be possible; it looks like just signalling.

Qualcomm would prefer to send an LS to SA2. Apple think this would risk ping-pong considering that they already left it to us.

OPPO think we need to decide this meeting.

Qualcomm cannot accept a WA that results in duplicated functionality.

Lenovo note we already agreed that the AS layer is responsible for the QoS split, and it may be unnatural to then use upper layer signalling for it.

OPPO think the possible duplicated functionality is not a problem.

vivo have some concern about spec impact, since we would need differentiation between L2 and L3 relay.

Ericsson think it is about end-to-end QoS indication rather than QoS split.

Lenovo checked the SA2 LS and found that it explicitly asks for AS signalling, and that we would notify SA2 if we identify impact to them.

WA: AS signalling is used to indicate the end-to-end QoS and QoS split for L2 U2U relay.

Proposal 4: If the gNB of the relay UE performs local ID assignment for the source and target remote UE, the relay UE should report the source remote UE L2 ID and target remote UE L2 ID.

Proposal 5: If the gNB of the relay UE performs a QoS split, the relay UE delivers the QoS profile received from the source remote UE to the gNB.

Proposal 6: If the source remote UE is in RRC\_CONNECTED, the source remote UE reports the received split QoS value from the relay UE to its serving gNB.

- If the source remote UE operates in mode-1 resource allocation, the gNB can give a proper grant for sidelink resources.

- If the source remote UE operates in mode-2 resource allocation, the gNB can give a proper resource pool allocation.

Proposal 7: If the source remote UE is in RRC\_CONNECTED, the source remote UE reports the L2 ID of the relay UE as a destination ID.

Proposal 8: If the gNB of the source remote UE performs the end-to-end bearer configuration, the source remote UE should report the L2 ID of the target remote.

Discussion:

Ericsson understand we already agreed not to involve the gNB. Nokia, InterDigital, and Qualcomm agree, but InterDigital think there may be a need to involve the gNB in certain cases.

LG think we need to understand the level of gNB involvement.

OPPO think we already agreed that mode 1 is supported, so P7 should be agreeable. Ericsson think this is legacy operation and we do not need to agree to anything new.

Apple think we have not decided if we have a new list in the SUI message for U2U relay.

Qualcomm agree that P7 is legacy operation.

Ericsson think we could agree that there is no gNB involvement (beyond legacy) in the ID reporting/resource allocation procedures for an RRC\_CONNECTED UE. Huawei think we could discuss bearer configuration first. ZTE think we have not decided if the e2e bearer configuration should be performed by the gNB.

LG think we should avoid complex discussions about the bearer configuration. They understand we have mode 1 operation according to legacy procedures and no other gNB involvement.

OPPO think we would have impact to the SUI to indicate when the traffic is for U2U relay.

NEC think the gNB needs the SLRB configuration for a mode 1 UE to determine the LCIDs.

Agreements:

There are no additional procedures at the gNB beyond Rel-16 operation in the ID reporting/resource allocation procedures for an RRC\_CONNECTED U2U relay/remote UE. Some Rel-16 functionality may not be applicable to U2U (to be determined on a case by case basis). FFS stage 3 impact to message formats (e.g., additional fields).

Mode 1 resource allocation is supported for U2U relay according to Rel-16 procedures.

P1/P2/P3/P4/P5/P6/P7/P8a/P8b/P9/P10/P11 (some topics may go to offline)

[R2-2309975](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309975_Discussion%20on%20U2U%20Relay%20discovery%20and%20%28re%29selection.doc) Discussion on U2U Relay discovery and (re)selection ZTE, Sanechips discussion Rel-18 NR\_SL\_relay\_enh-Core

Relay discovery:

Proposal 1: [Issue 5.1] Separate thresholds are configured for U2U relay UE for Model A, Model B and integrated discovery respectively.

Proposal 2: [Issue 5.2] The same threshold(s) is configured for U2U remote UE for relay selection and re-selection trigger evaluation.

Proposal 3: When relay (re)selection is triggered, integrated-discovery can be also triggered to discover and select a relay UE.

Proposal 4: [Issue 5.9] Relay communication resource pool is used for DCR message with integrated-discovery.

Proposal 5: [Issue 5.13] Only SL-RSRP is applied to PC5 link quality evaluation for forwarding DCR message with integrated discovery.

Proposal 6: [Issue 5.16] For U2U relay UE and target remote UE, AS layer check discovery transmission condition before delivering received discovery message to upper layer. If not satisfied, AS layer does not deliver the received discovery message to upper layer so that the upper layer does not need to generate the discovery message for the next step.

Relay (re)selection:

Proposal 7: When PC5 RLF of the direct link is detected, remote UE can trigger relay selection.

Proposal 8a: [Issue 5.14] When there is no direct link, if remote UE detects SL-RSRP or SD-RSRP of the peer remote UE is below a threshold or there is no signal received from the peer remote UE, the remote UE can be triggered to perform relay selection.

Proposal 8b: [Issue 5.14] There is no need to differentiate whether there is a established PC5 link between the two remote UEs when evaluating SL-RSRP/SD-RSRP of peer remote UE for relay selection trigger.

Proposal 9: Relay UE sends indication to the remote UE upon detecting the PC5 link quality of the second hop is below a configured threshold. When receiving the indication, the remote UE may trigger relay re-selection even if the PC5 link quality of the first hop is good.

Proposal 10: [Issue 5.11] RAN2 confirm the following agreement applies to both source remote UE and target remote UE, and applies to both L2 and L3 U2U relay.

− When the remote UE receives PC5-RLF indication from the U2U relay UE, it would inform upper layers and rely on upper layers to trigger relay reselection (or not).

Proposal 11: [Issue 5.12] When receiving PC5 RLF notification from the relay UE, the remote UE can release the PC5 link with the relay UE only if the upper layer indicates to trigger relay re-selection and there are no multiplexed traffic of different peer remote UEs in the PC5 link. Otherwise, the remote UE should keep the PC5 link with the relay UE.

* [AT123bis][421][Relay] U2U discovery and (re)selection (ZTE)

 Scope: F2F offline to discuss P1/P2/P3/P4/P5/P6/P7/P8a/P8b/P9/P10/P11 of R2-2309975 and find agreeable ways forward.

 Intended outcome: Report to CB session

 Deadline: Wednesday 2023-10-11 2000 CST

 Schedule: Tentatively Wednesday 2023-10-11 1100-1200 in Brk3 (ZTE to confirm with secretary)

Potential SA2 issue on local ID management

[R2-2309613](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309613%20Cross%20Group%20Issue%20for%20U2U%20Relay.docx) Cross Group Issue for U2U Relay CATT discussion Rel-18 NR\_SL\_relay\_enh-Core

Proposal 1: RAN2 confirms that through U2U relay discovery and per hop PC5-S connection establishment procedures, the source 5G ProSe End UE cannot acquire the target 5G ProSe End UE’s L2 ID.

Proposal 2: Relay UE should notify the target 5G ProSe End UE’s L2 ID to the source 5G ProSe End UE before the local ID allocation procedure.

Proposal 3: RAN2 sends one LS to SA2 to inform that Relay UE should notify the target 5G ProSe End UE’s L2 ID to the source 5G ProSe End UE before local ID allocation procedure, e.g., during the discovery procedure or the per hop PC5-S connection establishment.

Other documents

[R2-2309612](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309612%20Disussion%20on%20U2U%20Relay.docx) Discussion on U2U Relay CATT discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309679](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309679%20-%20Discussion%20on%20control%20plane%20procedure%20of%20U2U%20Relay.docx) Discussion on control plane procedure of U2U relay OPPO discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309680](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309680%20-%20Discussion%20on%20user%20plane%20procedure%20of%20U2U%20Relay.docx) Discussion on user plane procedure of U2U relay OPPO discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309817](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309817%20Discussion%20on%20CP%20aspects%20for%20U2U%20relay.docx) Discussion on CP aspects for U2U relay Xiaomi discussion

[R2-2309822](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309822_Remaining%20issues%20on%20U2U%20relay.docx) Remaining issues on U2U relay vivo discussion

[R2-2309885](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309885%20Remaining%20issues%20on%20AS%20layer%20configuration%20for%20L2%20U2U%20Relay.docx) Remaining issues on AS layer configuration for L2 U2U Relay ASUSTeK discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309886](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309886%20Remaining%20issues%20on%20PC5%20radio%20link%20failure%20and%20PC5%20link%20release.docx) Remaining issues on PC5 radio link failure and PC5 link release ASUSTeK discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309887](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309887%20Remaining%20issue%20on%20E2E%20PC5-RRC%20procedures.docx) Remaining issue on E2E PC5-RRC procedures ASUSTeK discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309901](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309901%20Discussion%20on%20U2U%20relay_2.doc) Discussion on U2U relay Fujitsu discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309927](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309927%20Discussion%20on%20L2%20U2U%20relay%20v1.0.docx) Discussion on L2 U2U relay Lenovo discussion Rel-18

[R2-2309970](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309970%20Control%20plane%20issues%20for%20L2%20U2U%20relay.doc) Control plane issues for L2 U2U relay Samsung discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309976](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309976_Discussion%20on%20U2U%20relay%20L2%20specific%20functionality.doc) Discussion on U2U relay L2-specific functionality ZTE, Sanechips discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310012](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310012%20Discussion%20on%20UE-to-UE%20relay.doc) Discussion on UE-to-UE Relay Spreadtrum Communications discussion Rel-18

[R2-2310093](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310093%20Discussion%20on%20remaining%20issue%20of%20U2U%20relay.docx) Discussion on remaining issue of U2U relay NEC discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310139](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310139%20Open%20issues%20on%20QoS.docx) Open issues on QoS for U2U Nokia, Nokia Shanghai Bell discussion NR\_SL\_relay\_enh-Core

[R2-2310167](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310167%20%28R18%20SL%20Relay%20WI_AI792%20U2U%20Relays_Open%29.doc) Open Issues on Discovery, Relay Selection, and SRAP for UE to UE Relays InterDigital discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310168](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310168%20%28R18%20SL%20Relay%20WI_AI792%20U2U%20Relay_QoS%29.doc) QoS and Configuration for L2 UE-to-UE Relays InterDigital discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310226](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310226%2BDiscussion%20on%20the%20remaining%20issues%20on%20L2%20U2U%20relay.doc) Discussion on the remaining issues on L2 U2U relay China Telecom discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310256](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310256%20Discussion%20on%20U2U%20SL%20relay.docx) Discussion on U2U SL relay CMCC discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310348](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310348%20Discussion%20on%20U2U%20relay%20issues.doc) Discussion on remaining issues on UE-to-UE Relay Apple discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310406](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310406-Control%20plane%20procedure%20for%20U2U%20relay.docx) Control plane procedure for U2U relay operation LG Electronics Inc. discussion Rel-18

[R2-2310486](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310486%20Discussion%20on%20UE-to-UE%20relay.doc) Discussion on UE-to-UE relay Huawei, HiSilicon discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310597](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310597.docx) Discussion on Open Issues for U2U relay RRC Beijing Xiaomi Mobile Software discussion Rel-18 38.331 NR\_SL\_relay\_enh-Core

[R2-2310613](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310613%20Open%20issues%20on%20U2U.docx) Open issues on U2U Nokia, Nokia Shanghai Bell discussion NR\_SL\_relay\_enh-Core

[R2-2310770](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310770.doc) UE-to-UE relay (re)selection Sony discussion Rel-18 NR\_SL\_relay\_enh

[R2-2310779](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310779-Open%20issues%20for%20Discovery%20and%20Relay%20%28re%29selection.docx) Open issues for Discovery and Relay (re)selection Qualcomm Incorporated discussion NR\_SL\_relay\_enh-Core

[R2-2310780](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310780-%20Layer-2%20specific%20part%20on%20U2U%20Relay.docx) Layer-2 specific part on U2U Relay Qualcomm Incorporated discussion NR\_SL\_relay\_enh-Core

[R2-2310925](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310925_Discussion_on_Relay_reselection_Discovery.docx) Discussion on Relay (re)selection and Discovery Ericsson España S.A. discussion Rel-18

[R2-2310926](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310926_Control_Plane_Procedures_for_L2_U2U_relays.docx) Control Plane Procedures for Layer 2 UE-to-UE Relays Ericsson España S.A. discussion Rel-18

[R2-2311017](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311017_SL%20Relay_U2U_OpenIssues_FhG.docx) Discussion on remaining issues on U2U Relaying Fraunhofer IIS, Fraunhofer HHI discussion Rel-18 NR\_SL\_relay\_enh

[R2-2311038](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311038_U2U_relay.docx) Considerations for U2U L2 relay operations Kyocera discussion

[R2-2311114](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CDocs%5CR2-2311114.zip) Discussion on U2U relay Kyoto University, SHARP discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2311174](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311174%20SRAP%20design%20for%20U2U%20sidelink%20relay.docx) SRAP design for U2U Sidelink Relay: remaining issues Samsung R&D Institute UK discussion

[R2-2311175](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311175-U2U.doc) remaining issues for U2U relay Sharp discussion Rel-18 NR\_SL\_relay\_enh-Core

### 7.9.3 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.

Idle/inactive relay

[R2-2310349](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310349%20Path%20switching%20to%20IDLE%20or%20INACTIVE%20relay%20UE.doc) Discussion on path switching to IDLE/INACTIVE relay Apple discussion Rel-18 NR\_SL\_relay\_enh-Core R2-2307856

Proposal 1: As same as Rel-17, Rel-18 Layer-2 U2N Remote UE supporting to be handed over to an IDLE/INACTIVE target relay UE is a UE capability.

Proposal 2: L2 Remote UE not supporting “handed over IDLE/INACTIVE target relay” feature only reports CONENCTED candidate relay(s)’ measurements to its serving gNB.

Proposal 3: RRC state of L2 U2N relay UE is included in U2N relay discovery announcement/response message.

Discussion:

Qualcomm want to understand if it reuses the Rel-17 capability or introduces a new one; they understand no new enhancement in this respect. Xiaomi have the same understanding that no new capability is needed. Lenovo agree, and on P2, they think there is no need to exclude the idle/inactive candidates and the gNB can filter based on the RRC state.

Huawei think P3 is not needed; the gNB can filter.

Samsung are OK to reuse the Rel-17 capability flag, but on P2/P3, they see that they are linked and would prefer not to introduce new signalling/functionality.

Kyocera support P2/P3 because the source gNB does not necessarily know the state of the target relay UE.

Nokia agree with Samsung and Huawei that the target gNB knows, and the source only needs to forward the UE capability to the target.

InterDigital understand that the agreement in Rel-17 to have the gNB filter is based on the intra-gNB case, and it would be better to have the additional information.

Qualcomm think we can rely on the gNB.

ZTE support all three proposals, and they agree with InterDigital that the source gNB needs to know if the remote UE can switch to a given target when it chooses the target gNB.

Apple understand that an error case is possible where the source gNB chooses a target gNB that then has no eligible candidate relay UE, and the source gNB cannot sensibly choose the target gNB without knowing the state of the relay UEs.

NEC wonder if we include the RRC state in discovery, whether it would impact a Rel-17 remote UE doing intra-gNB path switch. Qualcomm understand that we do not need any enhancement for a Rel-17 UE, and they do not want to have impact to the relay UE

Ericsson think P3 is an optimisation and the existing mechanisms can work.

LG think the candidate relay UE reporting can be restricted due to signalling load.

Huawei think there is no problem for the gNB; it can bring the target UEs to RRC\_CONNECTED if needed.

OPPO agree that the current mechanism works and changes would be an optimisation.

Lenovo agree with Huawei and think the target gNB can page the target relays.

Xiaomi think if the relay UE changes RRC state, it will result in a lot of signalling, so they want to avoid this scenario.

CMCC think P3 is not needed and might introduce RAN3 impact.

Kyocera wonder if the source gNB can choose multiple candidate target gNBs, and they understand we agreed to have the state transition initiated by the remote UE.

Agreements:

Same as Rel-17, Rel-18 Layer-2 U2N Remote UE supporting to be handed over to an IDLE/INACTIVE target relay UE is a UE capability.

Reuse the Rel-17 capability flag.

RRC state is not indicated in discovery signalling; the remote UE reports all candidate relay UEs.

Proposal 4: RAN2 discuss how to reduce the “x-to-indirect” path switching latency for IDLE/INACTIVE target relay case in Rel-18.

Discussion:

Apple think we have too many messages for this case and it will be a performance problem. Ericsson have some sympathy for this view; they think paging solutions can be considered, and it is a bit fuzzy that we do not exclude them clearly today.

Xiaomi think the gNB can already page the RRC\_INACTIVE UE, so this is only an issue for RRC\_IDLE, and they do not see this as a very big problem.

Nokia agree with Apple that the delay is a problem, and they think it may make a difference to whether the feature can work.

Qualcomm think this proposal is valid also for intra-gNB, and we should not take it as part of the WI. Huawei agree.

Ericsson think we do not explicitly exclude the inactive case, but there are some cases where it may not work if the relay UE has not reported its L2ID. They would be OK to consider it as a TEI.

Proposal 5: Rel-18 L2 remote UE only stops T420 timer for IDLE/INACTIVE relay case when the realy UE indicates that the indirect path is fully ready (i.e. via PC5-RRC notification message from the target relay UE).

Proposal 6: RAN2 discuss how to ensure the early detection of “target IDLE/INACTIVE relay UE has reselected a different cell” error case in Rel-18.

Measurement events and emergency cause value

[R2-2309823](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309823_Remaining%20issues%20on%20service%20continuity%20enhancement%20for%20L2%20U2N%20relay.docx) Remaining issues on service continuity enhancement for L2 U2N relay vivo discussion

Measurement Event Z1

Proposal 1a For i2i path switch procedure, if the U2N Remote UE has available SL-RSRP measurement results with the serving U2N Relay UE, it applies the SL-RSRP threshold configured for threshold1 and the SD-RSRP threshold configured for threshold2 to evaluate measurement event Z1.

Proposal 1b For i2i path switch procedure, if the U2N Remote UE has no available SL-RSRP measurement results with the serving U2N Relay UE, it applies the SD-RSRP threshold configured for threshold1 and the SD-RSRP threshold configured for threshold2 to evaluate measurement event Z1.

Discussion:

Lenovo understand we agreed that there are separate thresholds, and if the threshold is associated with a received RSRP type, the UE should apply that one. So they understand that the proposals are not needed.

InterDigital think these proposals diverge from where we were going last meeting; they think for P1b, it is not clear how the network would know how to configure the second threshold. Samsung have the same understanding.

Qualcomm wonder if we would require the gNB to provide both thresholds always.

vivo think we should have clear UE behaviour for the case that SL-RSRP is not available.

Xiaomi understand the intention is to prioritise SL-RSRP over SD-RSRP when both are available, and they would rather leave it to UE implementation. Huawei also think it can be left to UE implementation.

Measurement Event X1

Proposal 2 For inter-gNB i2d path switch procedure, separate thresholds for SL-RSRP and SD-RSRP can be configured for the threshold1 in measurement event X1.

Proposal 3a For inter-gNB i2d path switch procedure, if the U2N Remote UE has available SL-RSRP measurement results with the serving U2N Relay UE, it applies the SL-RSRP threshold configured for threshold1 and the Uu RSRP threshold value configured for threshold2 to evaluate measurement event X1.

Proposal 3b For inter-gNB i2d path switch procedure, if the U2N Remote UE has no available SL-RSRP measurement results with the serving U2N Relay UE, it applies the SD-RSRP threshold configured for threshold1 and the Uu RSRP threshold configured for threshold2 to evaluate measurement event X1.

Measurement Event X2

Proposal 4 For inter-gNB i2d path switch procedure, separate thresholds for SL-RSRP and SD-RSRP can be configured for the threshold in measurement event X2.

Proposal 5a For inter-gNB i2d path switch procedure, if the U2N Remote UE has available SL-RSRP measurement results with the serving U2N Relay UE, it applies the SL-RSRP threshold configured for threshold to evaluate measurement event X2.

Proposal 5b For inter-gNB i2d path switch procedure, if the U2N Remote UE has no available SL-RSRP measurement results with the serving U2N Relay UE, it applies the SD-RSRP threshold configured for threshold to evaluate measurement event X2.

Agreements:

For i2i and i2d path switch procedures, the U2N remote UE applies the SL-RSRP threshold when measuring SL-RSRP and the SD-RSRP threshold when measuring SD-RSRP.

Both SL-RSRP and SD-RSRP thresholds are expected to be available to the UE. FFS signalling details (e.g., if the second one defaults to be equal to the first).

Other Mobility Enhancements

Proposal 6 RAN2 to deprioritize discussion on the following mobility issues to support U2N Remote UE’s path switch in Rel-18.

 simultaneous relay UE’s inter-gNB HO and connected remote UE’s path switching

 selection of relay UE in RRC\_IDLE or RRC\_INACTIVE state

 relay UE’s cell reselection or HO during indirect path switching of the remote UE

 prolonged inter-gNB signaling over Xn interface for inter-gNB path switching

 CHO-like path switching solution for remote UE

 DAPS like path switch solution for remote UE

 group handover for relay UE and remote UE(s)

FFS issue on emergency cause value

Proposal 7 The Relay UE’s upper layer interactions between NAS layer and ProSe layer would guarantee that Rel-18 U2N Relay UE in RRC\_IDLE or RRC\_INACTIVE sets emergency cause value provided by its NAS layer in case of emergency service relaying in SL-RLC1 case for path switch. No RAN2 spec impact is foreseen.

Discussion:

Apple would prefer to have it handled by upper layers. Xiaomi agree.

OPPO think the upper layer does not currently support passing the cause value to AS layer for this case, so they see upper-layer spec impact if we agreed this. vivo do not see spec impact.

Section 2.3

[R2-2310702](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310702%20SL%20Relay%20Service%20Continuity.docx) SL Relay service continuity considerations Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_SL\_relay\_enh-Core

Proposal 3.1: RAN2 agree that a solution is needed to remove the ambiguity of the measured RSRP values of the serving L2 U2N relay in the reports provided by the L2 U2N remote UE.

Proposal 3.2: RAN2 to discuss how to enhance the value reported in sl-MeasResult to remove the ambiguity on the reported value:

1) Adding a new flag that indicates whether the reported value is an SL-RSRP or an SD-RSRP

2) Reporting a compensated value instead of the measured SL-RSRP:

2a) The measured SL-RSRP is increased, by the reporting UE by the offset provided for discovery or by the difference of SL-RSRP and SD-RSRP thresholds provided for Z1.

2b) The measured SL-RSRP is increased, by the reporting UE by the difference between its maximum and the actually used transmission power over the given PC5 unicast link.

2c) The measured SL-RSRP is increased, by the reporting UE, by the value corresponding to the pathloss over the given PC5 unicast link.

[R2-2309614](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309614%20Further%20Consideration%20on%20Service%20Continuity%20Enhancements.docx) Further Consideration on Service Continuity Enhancements CATT discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309971](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309971%20Discussion%20on%20L2%20U2N%20Relay%20service%20continuity.doc) Discussion on L2 U2N Relay service continuity Samsung discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309977](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309977_Remaining%20issues%20on%20service%20continuity.doc) Further discussion on service continuity for SL relay ZTE, Sanechips discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310227](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310227%20Additional%20text%20proposal%20for%20the%20introduction%20of%20R18%20SL%20relay%20service%20continuity%20in%20TS%2038.331.docx) Additional text proposal for the introduction of R18 SL relay service continuity in TS 38.331 China Telecom discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310257](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310257%20Remaining%20issues%20on%20service%20continuity.docx) Remaining issues on service continuity CMCC discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310286](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310286_Discussion%20on%20Remaining%20Issues%20of%20Service%20Continuity.docx) Discussion on Remaining Issues of Service Continuity NEC Corporation discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310771](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310771.doc) Service continuity enhancements for UE sidelink relay Sony discussion Rel-18 NR\_SL\_relay\_enh

[R2-2310927](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310927_Discussion_on_Inter_gNB_Service_Continuity.docx) Discussion on Inter-gNB Service Continuity Ericsson España S.A. discussion Rel-18

[R2-2311008](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311008.docx) Discussion on Service Continuity Huawei, HiSilicon discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2311176](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311176-SLR_enh_core%20Remaining%20issues%20for%20i2i%20path%20switching.doc) Remaining issues for i2i path switching Sharp discussion Rel-18 NR\_SL\_relay\_enh-Core

### 7.9.4 Multi-path relaying

Mechanisms to support multi-path scenarios 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). This agenda item will include a rapporteur contribution summarising open issues from RAN2#121 (invited contribution not counted against the tdoc limit).

Including report of [Post123][407][Relay] Path addition/change in multi-path for scenario 1 (Apple)

Email discussion report

[R2-2310350](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310350%20Summary%20of%20Path%20addition-change%20in%20MP%20Scenario1%20V25_Rapp_final.docx) Summary of [Post123][407][Relay] Path addition/change in multi-path for Scenario 1 Apple discussion Rel-18 NR\_SL\_relay\_enh-Core

Case G in scenario 2 (discussed jointly)

[R2-2310258](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310258%20Discussion%20on%20indrect%20path%20change%20in%20scenario%202.docx) Discussion on indrect path change in scenario 2 CMCC, Huawei, HiSilicon, Qualcomm, ZTE, NEC, Samsung, Lenovo discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310351](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310351%20Discussion%20on%20indirect-path%20change%20in%20Scenario%202_r2.doc) Discussion on Case G Support in Multi-path Scenario 2 Apple, Ericsson, Nokia, Nokia Shanghai Bell, Kyocera, LG Electronics discussion Rel-18 NR\_SL\_relay\_enh-Core

P1-P12

[R2-2310781](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310781-open%20issues%20for%20MP%20relay.docx) Open issues on multi-path relay for scenario 1 and scenario 2 Qualcomm Incorporated discussion NR\_SL\_relay\_enh-Core

Other documents

[R2-2309588](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309588%20Discussion%20on%20Path%20addition%20and%20change%20for%20multipath%20Scenario-1.docx) Discussion on Path addition and change for multipath Scenario-1 NEC discussion NR\_SL\_enh2

[R2-2309615](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309615_Remaining%20issues%20on%20Multi-path.docx) Remaining issues on Multi-path CATT discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309681](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309681%20-%20Discussion%20on%20control%20plane%20procedure%20of%20multi-path%20Relay.docx) Discussion on control plane procedure of multi-path relay OPPO discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309682](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309682%20-%20Discussion%20on%20user%20plane%20procedure%20of%20multi-path%20Relay.docx) Discussion on user plane procedure of multi-path relay OPPO discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309756](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309756%20Discussion%20on%20issues%20for%20Multi-path%20relaying.doc) Discussion on remaining issues for multi-path relaying LG Electronics France discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309804](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309804.docx) Discussion on multi-path scenario 1 Xiaomi discussion

[R2-2309805](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309805.docx) Discussion on multi-path scenario 2 Xiaomi discussion

[R2-2309824](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309824_Remaining%20Issues%20for%20Multi-path.docx) Remaining Issues for Multi-path vivo discussion

[R2-2309825](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309825_Authorization%20for%20Multi-path%20Scenario%202.docx) Authorization for Multi-path Scenario 2 vivo, Qualcomm incorporated discussion

[R2-2309888](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309888%20Remaining%20issue%20on%20BSR%20reporting%20for%20Multi-path%20Scenario%202.docx) Remaining issue on BSR reporting for Multi-path Scenario 2 ASUSTeK discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309928](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309928%20Failure%20handling%20in%20indirect%20path%20addition%20and%20change%20v2.0.docx) Failure handling in indirect path addition and change Lenovo discussion Rel-18

[R2-2309929](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309929%20Discussion%20on%20direct%20path%20addition%20v1.0.docx) Discussion on direct path addition Lenovo discussion Rel-18

[R2-2309978](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309978%20Further%20discussion%20on%20the%20support%20of%20multi-path%20relaying.docx) Further discussion on the support of multi-path relaying ZTE, Sanechips discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2309980](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309980_SLRelay_v1.0.docx) Discussion on remaining issues on multiple path for sidelink relay Samsung discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310013](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310013%20Discussion%20on%20multi-path%20relaying.doc) Discussion on multi-path relaying Spreadtrum Communications discussion Rel-18

[R2-2310160](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310160%20Discussion%20on%20Multi-path%20relaying.docx) Discussion on Multi-path relaying Lenovo discussion NR\_SL\_relay\_enh-Core

[R2-2310169](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310169%20%28R18%20SL%20Relay%20WI_AI794%20MultipathAspects_UP%29.doc) Remaining User Plane Aspects for Multipath InterDigital discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310170](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310170%20%28R18%20SL%20Relay%20WI_AI794%20MultipathAspects_CP%29.doc) Remaining Control Plane Aspects for Multipath InterDigital discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310259](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310259%20Remaining%20issues%20on%20multi-path.docx) Remaining issues on multi-path CMCC discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310287](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310287_Discussion%20on%20UP%20Issues%20of%20Multi-path%20Relaying.docx) Discussion on UP Issues of Multi-path Relaying NEC Corporation discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310352](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310352%20Discussion%20on%20remaining%20issues%20on%20Multi-path.doc) Discussion on remaining issues for Multi-path Relay Apple discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310468](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310468_Discussion%20on%20multi-path%20scenario%201_III.docx) Discussion on multi-path scenario 1 III discussion NR\_SL\_relay\_enh

[R2-2310487](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310487%20CP%20remaining%20issues%20on%20multi-path%20operation.docx) CP remaining issues on multi-path operation Huawei, HiSilicon discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310488](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310488%20UP%20remaining%20issues%20on%20multi-path%20operation.docx) UP remaining issues on multi-path operation Huawei, HiSilicon discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310772](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310772.doc) Multi-path relaying discussion Sony discussion Rel-18 NR\_SL\_relay\_enh

[R2-2310815](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310815%20Discussion%20on%20control%20plane%20open%20issues%20of%20multi-path%20relaying.docx) Discussion on control plane open issues of multi-path relaying China Telecom discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2310876](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310876%20DIscussion%20on%20Mpath.docx) Discussion on Multi-path Nokia, Nokia Shanghai Bell discussion NR\_SL\_relay\_enh-Core

[R2-2310928](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310928_Discussion_on_multipath%20relays.docx) Discussion on Multipath Relays Ericsson España S.A. discussion Rel-18

[R2-2311039](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311039_multipath_relay.docx) Considerations for multipath relay operations for Scenario 1 Kyocera discussion

[R2-2311109](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311109%20Discussion%20on%20user%20plane%20open%20issues%20of%20multi-path%20relaying.docx) Discussion on user plane open issues of multi-path relaying China Telecom discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2311177](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311177-MP1.doc) remaining issues for multi-path relay Sharp discussion Rel-18 NR\_SL\_relay\_enh-Core

[R2-2311178](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2311178-MP2.doc) scenario 2 specific issues for multi-path relay Sharp discussion Rel-18 NR\_SL\_relay\_enh-Core

### 7.9.5 DRX

Study the gains and, if needed, specify signalling between gNB and relay UE in sidelink mode 2 to assist the determination of the sidelink DRX configuration used for remote UE. This agenda item will be handled at lower priority.

## 7.24 TEI18

Specific items may be allocated to a breakout session for treatment.

Time budget: 1 TU

### 7.24.1 TEI proposals by Other Groups

Items initiated by other groups that is/has been communicated by LS, where the other group indicate this is TEI18. (Specific other-group-WIs should use the R18 Other Agenda Item below).

### 7.24.2 TEI proposals by RAN2

Items initiated in RAN2 for NR and LTE.

Tdoc limitation: 1 tdoc, limitation only applicable for non-previously-agreed-to-be-considered TEI proposals.
proposals that has been agreed or agreed to be considered are not limited by the tdoc limitation.

Relay: Emergency cause value

[R2-2309684](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309684%20-%20Discussion%20on%20emergency%20cause%20value%20for%20SL%20Relay.docx) Discussion on emergency cause value for SL Relay OPPO discussion Rel-18 NR\_SL\_relay\_enh-Core, TEI18

Relay: Paging cause forwarding

[R2-2309795](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2309795_Discussion%20on%20MUSIM%20paging%20cause%20forwarding.docx) Discussion on MUSIM paging cause forwarding vivo discussion Rel-18

Positioning: BT AoA/AoD

[R2-2310853](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310853%20Bluetooth.docx) Adding support for Bluetooth AoA/AoD Ericsson, AT&T, Polaris Wireless, u-blox, T-Mobile discussion Rel-18

Positioning: Remote UEs

[R2-2310544](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310544%20Discussion%20on%20issues%20for%20SFN-DFN%20offset%20procedure%20in%2038.331.docx) Discussion on issues for SFN-DFN offset procedure in 38.331 ZTE Corporation discussion Rel-18 TEI18

[R2-2310855](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310855%20Relay.docx) Forwarding on posSIBs relaying to remote UE [PosL2RemoteUE] Ericsson CR Rel-18 38.331 17.6.0 4354 - B TEI18

## 7.25 R18 Other

Specific items may be allocated to a breakout session for treatment.

Impacts from Other RAN WGs and TSGs that has no separate TU budget in RAN2. LS ins for Rel-18 specific WIs/SIs that has no RAN WI.

Time budget: 2 TU

Tdoc Limitation: -

### 7.25.1 RAN4 led items

### 7.25.2 RAN1 led items

E.g. MC enhancements, DSS

### 7.25.3 Other

RAN3, SA2, SA3, CT1 led items and others, e.g. eNPN, Slicing.

PRUs (considered in offline [402])

R2-2310854 On the Positioning Reference Units aspects [PRU] Ericsson, vivo discussion Rel-18

[R2-2310920](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202310%20-%20RAN2_123bis%2C%20Xiamen%5CExtracts%5CR2-2310920_%28PRU%20Stage%202%29.docx) Clarification of PRU measurement reporting Qualcomm Incorporated CR Rel-18 38.305 17.6.0 0146 - C 5G\_eLCS\_Ph3