3GPP TSG-RAN WG2 Meeting #128 R2-24xxxxx

Orlando, Florida, USA, 18-22 November 2024

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

## 4.3 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).

Tdoc Limitation: 1 tdoc

### 4.3.0 In-principle agreed CRs

### 4.3.1 Other

[R2-2410232](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2410232 Correction on broadcast of assistance data-r15_v00.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2410232 Correction on broadcast of assistance data-r15_v00.docx) Correction on broadcast of assistance data-r15 Huawei, HiSilicon CR Rel-15 36.331 15.23.0 5072 - F LCS\_LTE\_acc\_enh-Core

* Not pursued

Discussion:

Lenovo have some sympathy for the need code changes but are not sure if the NOTE clarifies. They think we should follow what we previously did with SBAS ID in NR.

Nokia think the usage of the fields is clear, and they would prefer not to make ASN.1 changes.

Qualcomm think Need OP is correct and OR is wrong; there is nothing to release, and they understand that the behaviour on absence is clear already in the field description; e.g., for encryption, present means yes and implicitly absent means no.

CATT agree with Qualcomm about the need code changes, and they think OR would be wrong because it implies that stored assistance data could be deleted or misapplied. They think we could add some description for absence. On the second change, they think the limitation to generic assistance data is not right.

Huawei think Need ON would be all right but OP is not. They think CATT’s comment about the second change is confusing as it suggests that the common assistance data would apply to only a certain GNSS. CATT indicate that for any GNSS, the AD should be included and there are both generic and common types.

Qualcomm understand that the GNSS ID is only for the generic assistance data and the common AD are GNSS-independent.

Ericsson think there would be inconsistency between NR and LTE if we took the GNSS ID change in this form, and maybe we don’t need to do anything; they see no practical confusion.

[R2-2410233](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410233%20Correction%20on%20broadcast%20of%20assistance%20data-r16_v00.docx) Correction on broadcast of assistance data-r16 Huawei, HiSilicon CR Rel-16 36.331 16.17.0 5073 - A LCS\_LTE\_acc\_enh-Core

* Not pursued

[R2-2410234](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410234%20Correction%20on%20broadcast%20of%20assistance%20data-r17_v00.docx) Correction on broadcast of assistance data-r17 Huawei, HiSilicon CR Rel-17 36.331 17.10.0 5074 - A LCS\_LTE\_acc\_enh-Core

* Not pursued

[R2-2410235](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410235%20Correction%20on%20broadcast%20of%20assistance%20data-r18_v00.docx) Correction on broadcast of assistance data-r18 Huawei, HiSilicon CR Rel-18 36.331 18.3.1 5075 - A LCS\_LTE\_acc\_enh-Core

* Not pursued

# 5 NR Rel-15 and Rel-16

Essential corrections only.

Tdoc Limitation: 2 tdocs in total for all sub agenda items NOTE: some agenda items have additional Tdoc limits.

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 treated 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)

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.

Tdoc Limitation: 1 tdoc

### 5.3.0 In-principle agreed CRs

[R2-2409562](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409562%20Correction%20on%20UE%20capability%20of%20supporting%20NavIC%20in%20A-GNSS%20positioning%20(R16).docx) Correction on GNSS-AlmanacSupport and GNSS-UTC-ModelSupport in A-GNSS positioning ZTE Corporation CR Rel-16 37.355 16.13.0 0516 1 F NR\_pos-Core R2-2408213

* Agreed as R2-2410906 (coversheet fixes)

[R2-2410906](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410906%20Correction%20on%20UE%20capability%20of%20supporting%20NavIC%20in%20A-GNSS%20positioning%20(R16).docx) Correction on GNSS-AlmanacSupport and GNSS-UTC-ModelSupport in A-GNSS positioning ZTE Corporation CR Rel-16 37.355 16.13.0 0516 2 F NR\_pos-Core R2-2408213

* Agreed

[R2-2409563](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409563%20Correction%20on%20UE%20capability%20of%20supporting%20NavIC%20in%20A-GNSS%20positioning%20(R17).docx) Correction on GNSS-AlmanacSupport and GNSS-UTC-ModelSupport in A-GNSS positioning ZTE Corporation CR Rel-17 37.355 17.8.0 0517 1 A NR\_pos-Core R2-2408214

* Agreed as R2-2410907 (coversheet fixes)

[R2-2410907](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410907%20Correction%20on%20UE%20capability%20of%20supporting%20NavIC%20in%20A-GNSS%20positioning%20(R17).docx) Correction on GNSS-AlmanacSupport and GNSS-UTC-ModelSupport in A-GNSS positioning ZTE Corporation CR Rel-17 37.355 17.8.0 0517 2 A NR\_pos-Core R2-2408214

* Agreed

[R2-2409564](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409564%20Correction%20on%20UE%20capability%20of%20supporting%20NavIC%20in%20A-GNSS%20positioning%20(R18).docx) Correction on GNSS-AlmanacSupport and GNSS-UTC-ModelSupport in A-GNSS positioning ZTE Corporation CR Rel-18 37.355 18.3.0 0518 1 A NR\_pos-Core R2-2408215

* Agreed as R2-2410908 (coversheet fixes)

[R2-2410908](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410908%20Correction%20on%20UE%20capability%20of%20supporting%20NavIC%20in%20A-GNSS%20positioning%20(R18).docx) Correction on GNSS-AlmanacSupport and GNSS-UTC-ModelSupport in A-GNSS positioning ZTE Corporation CR Rel-18 37.355 18.3.0 0518 2 A NR\_pos-Core R2-2408215

* Agreed

### 5.3.1 Other

[R2-2410236](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2410236 Corection to high accuracy extended uncerntainty in QoS-r16.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2410236 Corection to high accuracy extended uncerntainty in QoS-r16.docx) Corection to high accuracy extended uncerntainty in QoS-r16 Huawei, HiSilicon CR Rel-16 37.355 16.13.0 0537 - F TEI16 Revised

* Revised in R2-2410817

[R2-2410817](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410817%20Corection%20to%20high%20accuracy%20extended%20uncerntainty%20in%20QoS-r16.docx) Correction to high accuracy extended uncertainty in LCS QoS Huawei, HiSilicon CR Rel-16 37.355 16.13.0 0537 1 F TEI16 R2-2410236

* Not pursued

Discussion:

vivo think the addition should be an NCE rather than in the parent IE, and it can be covered in the parent field description.

CATT think the CR is not needed because the QoS already requires the accuracy, and they understand that uncertainty information is not required in the request.

Qualcomm think this is NBC and based on a misunderstanding. They see no relation between QoS and the GAD shapes; they understand that the extension becomes mandatory to avoid a new capability.

Huawei note that the location estimate is based on the uncertainty level, and with the HA enhancements, they do not see how the LMF can take the uncertainty into account properly. Qualcomm think it is not related to the GAD shapes; we use the same encoding for convenience.

Huawei indicate that this is for alignment with SA2 spec, which in turn is aligned with OMA.

CATT wonder if Huawei see that the accuracy in the location already meets the requirement from SA2. Huawei understand that it depends on the LCS service level, and our accuracy structure matches SA2.

Qualcomm indicate that the LMF cannot request the UE to report a particular GAD shape; the UE just fulfills the QoS as well as it can.

vivo support the CR in principle as an alignment with SA2; they understand that the SA2 spec distinguishes the two mapping tables for uncertainty. Qualcomm think in this case there is no ambiguity because we only support the 7-bit shape.

[R2-2410237](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410237%20Corection%20to%20high%20accuracy%20extended%20uncerntainty%20in%20QoS-r17.docx) Correction to high accuracy extended uncertainty in LCS QoS Huawei, HiSilicon CR Rel-17 37.355 17.8.0 0538 - A TEI16

* Not pursued

[R2-2410238](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410238%20Corection%20to%20high%20accuracy%20extended%20uncerntainty%20in%20QoS-r18.docx) Correction to high accuracy extended uncertainty in LCS QoS Huawei, HiSilicon CR Rel-18 37.355 18.3.0 0539 - A TEI16

* Not pursued

[R2-2409714](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409714%20Correction%20CR%20to%20TS%2037.355-Rel16.docx) Correction on NavIC almanac set IE, and field descriptions under KlobucharModelParamater, UTC-ModelSet2, and GNSS-SystemTime. Reliance Jio, MediaTek, Ericsson, Qualcomm Incorporated, CEWiT CR Rel-16 37.355 16.13.0 0531 - F LCS\_NAVIC-Core

* Remove the change to the UTC field descriptions
* Coversheet to clarify that the changes are to align with the ICD
* Check offline on the suffix of the extension field
* Revised in R2-2410982

Discussion:

Nokia think the coversheet is not completely informative about the L5 inclination field that is added, and they do not understand the motivation for this part. The rest seems somewhat editorial and fixing errors.

CATT think the UTC parameter field description change is not necessary because the references already indicate this dependency.

Lenovo indicate that there is a mistake on the coversheet: 6.5.2.10 is not changed; and in the ASN.1, for the new L5 field, the suffix should be -r16 (it is already correct in Rel-18). Qualcomm understand that for a NCE, -v16xy would be correct.

Qualcomm agree with CATT’s comment.

Ericsson think on the coversheet we could clarify that the changes are to align with the ICD.

CEWiT are OK to take a revision and update the coversheet. On the UTC field, they are OK with omitting the change.

CATT wonder if the ICD file is updated or the added IE was overlooked. Reliance Jio indicate that it was just an oversight in implementing the existing ICD.

* [AT128][401][POS] Revision of NavIC assistance data upates (CEWiT)

Scope: Check and update the CRs in R2-2409714 / R2-2410024 / R2-2410025 in accordance with online discussion.

Intended outcome: Agreed CRs (without CB if possible) in R2-2410982 / R2-2410983 / R2-2410984

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2410024](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410024%20Correction%20CR%20to%20TS%2037.355-Rel17.docx) Correction on NavIC L5 almanac set IE, and field descriptions under KlobucharModelParamater, UTC-ModelSet2, and GNSS-SystemTime Reliance Jio, MediaTek, Ericsson, Qualcomm Incorporated, CEWiT CR Rel-17 37.355 17.8.0 0533 - A LCS\_NAVIC-Core

* Revised in R2-2410983

[R2-2410025](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410025%20Correction%20CR%20to%20TS%2037.355-Rel18.docx) Correction on NavIC almanac set IE, and field descriptions under KlobucharModelParamater, UTC-ModelSet2, and GNSS-SystemTime. Reliance Jio, MediaTek, Ericsson, Qualcomm Incorporated, CEWiT CR Rel-18 37.355 18.3.0 0534 - A LCS\_NAVIC-Core

* Revised in R2-2410984

R2-2410982 Correction on NavIC almanac set IE, and field descriptions under KlobucharModelParamater, UTC-ModelSet2, and GNSS-SystemTime. Reliance Jio, MediaTek, Ericsson, Qualcomm Incorporated, CEWiT CR Rel-16 37.355 16.13.0 0531 1 F LCS\_NAVIC-Core

R2-2410983 Correction on NavIC L5 almanac set IE, and field descriptions under KlobucharModelParamater, UTC-ModelSet2, and GNSS-SystemTime Reliance Jio, MediaTek, Ericsson, Qualcomm Incorporated, CEWiT CR Rel-17 37.355 17.8.0 0533 1 A LCS\_NAVIC-Core

R2-2410984 Correction on NavIC almanac set IE, and field descriptions under KlobucharModelParamater, UTC-ModelSet2, and GNSS-SystemTime. Reliance Jio, MediaTek, Ericsson, Qualcomm Incorporated, CEWiT CR Rel-18 37.355 18.3.0 0534 1 A LCS\_NAVIC-Core

[R2-2410821](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410821.docx) Presence of ValueTag and ExpirationTime when posSIBs are segmented Ericsson CR Rel-15 37.355 15.3.0 0541 - F NR\_pos-Core Revised

* Revised in R2-2410873

[R2-2410873](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410873.docx) Presence of ValueTag and ExpirationTime when posSIBs are segmented Ericsson CR Rel-15 37.355 15.3.0 0541 1 F NR\_newRAT-Core R2-2410821

* Revised in R2-2411065

[R2-2411065](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411065%20Rel15.docx) Presence of ValueTag and ExpirationTime when posSIBs are segmented Ericsson, MediaTek Inc. CR Rel-15 37.355 15.3.0 0541 1 F NR\_newRAT-Core R2-2410821

* Not pursued

Discussion:

CATT think the second and third corrections are not needed; they understand that the valueTag will be there in every segment unless the content changes frequently, and the third change (field description) is gNB implementation.

ZTE think the added note is correct as far as describing UE behaviour, but if the valueTag is not present, it should also be understood to mean frequent change, and the UE should not accumulate segments with no valueTag at all.

Huawei think the first change (description) is correct but not essential, and the second change (note) is just one possible implementation; they understand the issue, but they think the expirationTime can also be used to avoid the same issue from an implementation pov, so they understand that it is up to the gNB implementation.

Nokia agree with Huawei; segmentation and reassembly is up to network implementation, and they think we could address any specific interoperability issues but we do not need a general guideline.

Qualcomm think the CR is not consistent; the note somewhat implies that the valueTag must be present in each segment, and the field description only says it needs to be there in the first segment. They think the expirationTime has been lost in the evolution of the CR, and that may be the field that is only needed in the first segment. They do not see a need to fix it from Rel-15, especially since the UE will fail decoding if it assembles segments with different valueTags.

Ericsson agree with CATT that we have guidance that for rapidly changing posSIBs, the valueTag and expirationTime are not applicable, but from UE perspective they think it can see segments with different or missing valueTags, irrespective of how fast the content changes. They agree that expirationTime is another indication of mismatched segments, but it should not be expected to be there in every segment.

MediaTek wonder what the space of network implementations is: Can the network segment a posSIB with no value tag, and the UE just has to rely on decoding failure?

vivo think the UE can detect the change based on the segment number.

Ericsson think the segment number is not enough, but it may be necessary to show an example.

CATT think there are two situations: the posSIB does not change frequently, and the posSIB changes frequently with each broadcast interval. For the first situation, they understand that the description is clear enough that the gNB should set the valueTag always, and the valueTag should be increased when the content changes; the UE should not mix segments from different valueTags. For the second situation, if the posSIB changes in each broadcast interval, segmentation does not work.

Qualcomm think segmentation with rapid change is possible if the valueTag is included, and they do not see where the specs are broken.

Nokia think adding more implementation detail into the spec opens a can of worms.

Huawei wonder if the proposal is the only method to avoid the issue; they think the network can also use the expirationTime, e.g., for RTK where the delivery of AD is highly predictable.

CATT understand that according to the existing mechanism, the valueTag will already prevent the UE from having this problem, but for the expirationTime they do not see a connection.

[R2-2410822](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410822_ValRel16.docx) Presence of ValueTag and ExpirationTime when posSIBs are segmented Ericsson CR Rel-16 37.355 16.13.0 0542 - A NR\_newRAT-Core

* Revised in R2-2411062

[R2-2411062](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411062%20Rel16.docx) Presence of ValueTag and ExpirationTime when posSIBs are segmented Ericsson, MediaTek Inc. CR Rel-16 37.355 16.13.0 0542 - A NR\_newRAT-Core

* Not pursued

[R2-2410823](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410823%20valRel17.docx) Presence of ValueTag and ExpirationTime when posSIBs are segmented Ericsson CR Rel-17 37.355 17.8.0 0543 - A NR\_newRAT-Core

* Revised in R2-2411063

[R2-2411063](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411063%20Rel17.docx) Presence of ValueTag and ExpirationTime when posSIBs are segmented Ericsson, MediaTek Inc. CR Rel-17 37.355 17.8.0 0543 - A NR\_newRAT-Core

* Not pursued

[R2-2410824](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410824.docx) Presence of ValueTag and ExpirationTime when posSIBs are segmented Ericsson CR Rel-18 37.355 18.3.0 0544 - F NR\_newRAT-Core Revised

* Revised in R2-2410869

[R2-2410869](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410869.docx) Presence of ValueTag and ExpirationTime when posSIBs are segmented Ericsson CR Rel-18 37.355 18.3.0 0544 1 A NR\_newRAT-Core R2-2410824

* Revised in R2-2411064

[R2-2411064](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411064%20Rel18.docx) Presence of ValueTag and ExpirationTime when posSIBs are segmented Ericsson, MediaTek Inc. CR Rel-18 37.355 18.3.0 0544 1 A NR\_newRAT-Core R2-2410824

* Not pursued

# 6 NR Rel-17

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

Tdoc limitation: 4 Tdocs

## 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))

### 6.2.0 In-principle agreed CRs

[R2-2409757](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409757%20Miscellaneous%20CR%20for%20Rel-17%20SL%20relay%20(Rel-17).docx) Miscellaneous CR for Rel-17 SL relay Huawei, HiSilicon, Philips International B.V., OPPO CR Rel-17 38.331 17.10.0 5086 1 F NR\_SL\_relay-Core R2-2409260

* Agreed

[R2-2409758](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409758%20Miscellaneous%20CR%20for%20Rel-17%20SL%20relay%20(Rel-18).docx) Miscellaneous CR for Rel-17 SL relay Huawei, HiSilicon, Philips International B.V., OPPO CR Rel-18 38.331 18.3.0 5087 1 A NR\_SL\_relay-Core R2-2409261

* Agreed

[R2-2409850](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\38331_CR4977r1_(Rel-17)_R2-2409850%20Clarification%20on%20the%20L2%20U2N%20Remote%20UE%20Measurement.docx) Clarification on the L2 U2N Remote UE Measurement CATT CR Rel-17 38.331 17.10.0 4977 1 F NR\_SL\_relay-Core R2-2407996

* Revised in R2-2410903 (formatting fixes)

[R2-2410903](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\38331_CR4977r2_(Rel-17)_R2-2410903%20Clarification%20on%20the%20L2%20U2N%20Remote%20UE%20Measurement.docx) Clarification on the L2 U2N Remote UE Measurement CATT CR Rel-17 38.331 17.10.0 4977 2 F NR\_SL\_relay-Core R2-2407996

* Agreed

[R2-2409851](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\38331_CR4978r1_(Rel-18)_R2-2409851_Clarification%20on%20the%20L2%20U2N%20Remote%20UE%20Measurement.docx) Clarification on the L2 U2N Remote UE Measurement CATT CR Rel-18 38.331 18.3.0 4978 1 A NR\_SL\_relay-Core R2-2407997

* Revised in R2-2410904 (formatting fixes)

[R2-2410904](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\38331_CR4978r2_(Rel-18)_R2-2410904%20Clarification%20on%20the%20L2%20U2N%20Remote%20UE%20Measurement.docx) Clarification on the L2 U2N Remote UE Measurement CATT CR Rel-18 38.331 18.3.0 4978 2 A NR\_SL\_relay-Core R2-2407997

* Agreed

### 6.2.1 Other

[R2-2410579](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2410579 - RRC correction on SidelinkUEInformationNR for NR sidelink relay communication transmission R17.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2410579 - RRC correction on SidelinkUEInformationNR for NR sidelink relay communication transmission R17.docx) RRC correction on SidelinkUEInformationNR for NR sidelink relay communication transmission Philips International B.V., NEC CR Rel-17 38.331 17.10.0 5171 - F NR\_SL\_relay-Core

* Not pursued

Discussion:

Huawei think the change is not correct because the following level 4 bullet covers relay behaviour

ZTE agree with Huawei, and they note that they submitted a similar CR in RAN2#126 that was considered not necessary.

Nokia tend to agree with Huawei.

Huawei think we have seen this issue before and decided not to change it.

[R2-2410580](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410580%20-%20RRC%20correction%20on%20SidelinkUEInformationNR%20for%20NR%20sidelink%20relay%20communication%20transmission%20R18.docx) RRC correction on SidelinkUEInformationNR for NR sidelink relay communication transmission Philips International B.V., NEC CR Rel-18 38.331 18.3.0 5172 - A NR\_SL\_relay-Core

* Not pursued

## 6.3 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))

### 6.3.0 In-principle agreed CRs

[R2-2410220](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410220%20Correction%20to%20MAC%20for%20R17%20POS-r17.docx) Correction to MAC for R17 POS-r17 Huawei, HiSilicon CR Rel-17 38.321 17.10.0 1998 - F NR\_pos\_enh-Core

* Agreed

[R2-2410221](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410221%20Correction%20to%20MAC%20for%20R17%20POS-r18.docx) Correction to MAC for R17 POS Huawei, HiSilicon CR Rel-18 38.321 18.3.0 1999 - A NR\_pos\_enh-Core

* Agreed

### 6.3.1 Other

Related to Rel-18 LS in R2-2409508 (see AI 7.1.1)

[R2-2409565](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409565%20Correction%20on%20spatial%20relation%20info%20in%20SP%20SRS%20activation%20deactivation%20MAC%20CE%20(R17).docx) Correction on spatial relation info in SP SRS activation deactivation MAC CE (R17) ZTE Corporation, Ericsson CR Rel-17 38.321 17.10.0 1977 - F NR\_pos\_enh-Core

* Revised in R2-2410985

Discussion:

Huawei think the CR is not needed in this form, because it addresses only the SP-SRS case in RRC\_INACTIVE and may be misleading. They think we could address it with an RRC clarification and not touch the MAC spec.

ZTE understand that RAN1’s LS did not indicate that SSB and PRS cannot be used; only the CSI-RS and SRS configured in RRC\_CONNECTED were excluded.

CATT agree with the intention of the CR but think the wording can be polished in the related RRC CR.

Qualcomm think the second sentence needs a bit of improvement; they think it should say “configured in RRC\_INACTIVE” rather than “configured in RRCRelease”.

Huawei want to avoid discussion of whether the spatial relation can be based on SSB or PRS, and they think an RRC clarification can eliminate the problematic setting of the MAC CE.

ZTE reiterate that RAN1 did not say anything about SSB or PRS; they are not sure why the SSB cannot be used.

CATT understand that signals from connected mode do not apply in RRC\_INACTIVE, hence the exclusion of CSI-RS and SRS from connected; but for SSB and PRS, they think it should work. In the RRC CR, they think the wording could include the relevant IE names to clarify which IEs are/are not configured for this SRS.

Huawei think when the gNB or UE wants to use other sources for the spatial relation, it needs to be within the configuration. They think the MAC CE will never be set wrongly if the RRC configuration is correct.

Qualcomm think it makes sense to document in the MAC spec, because the origin of this discussion was a question about whether a configuration from RRC\_CONNECTED can be used in RRC\_INACTIVE, and the CR clearly answers this.

Ericsson note that the MAC spec covers SP-SRS; they understand that the CR aligns with RAN1 specs.

Huawei think it is clear that in RRC\_INACTIVE, the UE only uses the configuration from SuspendConfig. Qualcomm think this may be right in principle, but the positioning setting is potentially different from other features and this is where the confusion originally came from.

CATT understand that RAN1 wanted to clarify Rel-17. Huawei think the main conclusion from the RAN1 LS is that we do not need to add CSI-RS configuration to SuspendConfig, and so nothing needs to be changed.

ZTE think we should take the CR to follow the RAN1 LS.

* [AT128][402][POS] Spatial relation info source for positioning in RRC\_INACTIVE (ZTE)

Scope: Polish the RRC and MAC CRs in R2-2409565 and R2-2409607 and their shadows, and discuss to converge on what level of changes to the MAC spec are acceptable.

Intended outcome: Agreeable CRs (with CB) in R2-2410985 / R2-2410986 / R2-2410987 / R2-2410988

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2409566](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409566%20Correction%20on%20spatial%20relation%20info%20in%20SP%20SRS%20activation%20deactivation%20MAC%20CE%20(R18).docx) Correction on spatial relation info in SP SRS activation deactivation MAC CE (R18) ZTE Corporation, Ericsson CR Rel-18 38.321 18.3.0 1978 - A NR\_pos\_enh-Core

* Revised in R2-2410986

[R2-2409607](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409607%20Correction%20on%20spatial%20relation%20info%20in%20SRS%20configuration%20(R17).docx) Correction on spatial relation info in SRS configuration (R17) ZTE Corporation, Ericsson CR Rel-17 38.331 17.10.0 5101 - F NR\_pos\_enh-Core

* Revised in R2-2410987

[R2-2409608](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409608%20Correction%20on%20spatial%20relation%20info%20in%20SRS%20configuration%20(R18).docx) Correction on spatial relation info in SRS configuration (R18) ZTE Corporation, Ericsson CR Rel-18 38.331 18.3.0 5102 - A NR\_pos\_enh-Core

* Revised in R2-2410988

[R2-2410985](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410985.docx) Correction on spatial relation info in SP SRS activation deactivation MAC CE (R17) ZTE Corporation, Ericsson CR Rel-17 38.321 17.10.0 1977 - F NR\_pos\_enh-Core

[R2-2410986](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410986.docx) Correction on spatial relation info in SP SRS activation deactivation MAC CE (R18) ZTE Corporation, Ericsson CR Rel-18 38.321 18.3.0 1978 - A NR\_pos\_enh-Core

* Come back in main session on the MAC CRs above

[R2-2410987](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410987.docx) Correction on spatial relation info in SRS configuration (R17) ZTE Corporation, Ericsson, Qualcomm, CATT, Samsung, vivo, Nokia, Xiaomi CR Rel-17 38.331 17.10.0 5101 - F NR\_pos\_enh-Core

* Agreed

[R2-2410988](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410988.docx) Correction on spatial relation info in SRS configuration (R18) ZTE Corporation, Ericsson, Qualcomm, CATT, Samsung, vivo, Nokia, Xiaomi CR Rel-18 38.331 18.3.0 5102 - A NR\_pos\_enh-Core

* Agreed

Discussion:

Huawei think not even the RRC change is needed, but they can accept the RRC CR without the MAC CR. They understand that the RRC procedure is already clear since Rel-15.

ZTE think the procedure is not so clear and it is helpful for implementation teams to have it explicit.

Ericsson agree that the RRC constraint is there, but for the MAC, we already have specifications on which signals are applicable and which are not, and they find no harm in clarifying this case. They agree it is helpful for implementation.

CATT think it is clear that SRS is configured in separate IEs in the two states, and which signals cannot be used is clear from the RAN1 LS, so they see some connection between the connected and inactive configurations. They think we need to capture the RAN1 agreement.

Nokia think some explicit clarification is good, especially since we needed the exchange of LSs with RAN1 to get the clarification from them. If there is a technical issue they are open to discuss it, but in principle they think we should have the change.

Qualcomm consider the MAC CR more important; we have one MAC CE for both connected and inactive, and this CR is the only place that indicates it.

Huawei think if there is a clarification in RRC, it should start from Rel-15. They understand that it is clear already that the UE only applies the configuration from SuspendConfig.

ZTE think we are only considering the positioning-specific features, and a general clarification from Rel-15 would affect other features and should not be considered here. They think it would be correct if such a clarification were made, but not in the positioning session.

Huawei still think the MAC CR is redundant with the restriction in the RRC configuration and there should be no confusion about the applicability of the MAC CE.

ZTE think the MAC CE description could be misread regarding what is applicable in which state, leading to a wrong implementation.

Qualcomm note that SRS for positioning in inactive was introduced in Rel-17, and in Rel-18 we had the discussion of the MAC CE applicability, so it was clearly not obvious to everyone.

CATT observe that we had no conclusion before RAN1 sent the LS, which argues that we need some clarification.

Huawei think a clarification from the reader’s point of view is up to the reader’s interpretation.

Ericsson would like to postpone if we cannot reach agreement. Nokia think postponing or going to the main session would not help and we should decide here.

Ericsson think we could consult with the MAC spec rapporteur.

[R2-2409628](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409628%20Corrections%20on%20the%20NOTE%20in%20the%20description%20of%20dl-PRS-MeasRRC-Inactive%20R17.docx) Corrections on the NOTE in the description of dl-PRS-MeasRRC-Inactive CATT CR Rel-17 37.355 17.8.0 0529 - F NR\_pos\_enh-Core

* Not pursued

Discussion:

Lenovo understand we captured text from the RAN1 feature list; they agree it looks a bit confusing, but they understood it meant that all these capabilities are consistent between connected and inactive.

Huawei wonder if the CR changes the meaning.

Ericsson think the original sentence says that all these capabilities, as already defined for connected mode, are also applicable in inactive mode.

Agreement:

RAN2 understand that for the capabilities enumerated in NOTE 2 under the field description of dl-PRS-MeasRRC-Inactive, each of the capabilities is the same in RRC\_CONNECTED and RRC\_INACTIVE (i.e., there is no implication that the different capabilities are the same as each other).

[R2-2409629](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409629%20Corrections%20on%20the%20NOTE%20in%20the%20description%20of%20dl-PRS-MeasRRC-Inactive%20R18.docx) Corrections on the NOTE in the description of dl-PRS-MeasRRC-Inactive CATT CR Rel-18 37.355 18.3.0 0530 - A NR\_pos\_enh-Core

* Not pursued

[R2-2410222](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410222%20Correction%20to%20PRS%20priority%20subset%20for%20DL-AoD-r17_final.docx) Correction to PRS priority subset for DL-AoD-r17 Huawei, HiSilicon CR Rel-17 37.355 17.8.0 0535 - F NR\_pos\_enh-Core

* Postponed

Discussion:

Qualcomm wonder if it is really forbidden to use this for UE-based. Huawei agree it could be used, but our usual usage would say this field is only applicable for UE-assisted.

CATT understand that it applies to UE-based.

Samsung agree with the CR; after checking the RAN1 feature list, they found that this is for the UE-assisted case.

vivo also support the CR and confirmed with RAN1 colleagues the understanding that it is only needed for measurement reports.

CATT note that the UE can report the measurement also in UE-based.

Huawei think normally if an AD field is used for both, we label it as being for UE-assisted.

Nokia looked in the stage 3, and the field description there says it is for “reporting”, which suggests both UE-based and UE-assisted, with a reference to 38.214.

Chair wonders what the operational impact of the CR is. Huawei indicate that it is just for the sake of the spec, and an implementation will infer from other related specs what needs to be done.

Samsung checked the RAN1 feature list and found that the feature name includes “UE-assisted”.

[R2-2410223](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410223%20Correction%20to%20PRS%20priority%20subset%20for%20DL-AoD-r18_final.docx) Correction to PRS priority subset for DL-AoD-r18 Huawei, HiSilicon CR Rel-18 37.355 18.3.0 0536 - A NR\_pos\_enh-Core

* Postponed

[R2-2410825](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410825_MACRel17.docx) Correction of SRS type for TA alignment Ericsson CR Rel-17 38.321 17.10.0 2014 - F NR\_pos\_enh-Core

* Agreed

Discussion:

Huawei think the change is fine but not critical.

[R2-2410826](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410826%20MAC.docx) Correction of SRS type for TA alignment Ericsson CR Rel-18 38.321 18.3.0 2015 - A NR\_pos\_enh-Core

* Agreed

# 7 Rel-18

## 7.1 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: 0 TU

Tdoc Limitation: 2 tdocs

Minor and editorial issues should be coordinated with the appropriate spec rapporteur and submitted by rapporteur company together with any additional corrections the rapporteur company may have. Larger issues can be discussed based on contributions/individual CRs.

### 7.1.0 In-principle agreed CRs

Contributions agreed in principle at RAN2#127bis.

Unchanged (as far as the chair is aware) from AIP version

[R2-2409567](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409567%20Correction%20on%20assistance%20data%20transfer%20in%20SL%20positioning%20for%20stage-2.docx) Correction on assistance data transfer in SL positioning for stage-2 ZTE Corporation CR Rel-18 38.305 18.3.0 0175 2 F NR\_pos\_enh2 R2-2409259

* CN to be ticked instead of RAN
* Impact only to NR SA
* Agreed with these changes as R2-2410989

Discussion:

Lenovo think CN should be ticked instead of RAN, and the impacted architecture options should only be NR SA for all SL positioning CRs. Huawei wonder about LTE connected to 5GC.

Huawei understand that a UE camped on LTE cannot send NR SL-PRS. ZTE understand that we excluded SL positioning in MR-DC based on 37.340.

[R2-2409618](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409618%20Corrections%20of%20location%20TimeStamp,%20RSTD%20and%20RTOA%20report.docx) Corrections of location time stamp, RSTD and RTOA report CATT CR Rel-18 38.355 18.3.0 0008 3 F NR\_pos\_enh2-Core R2-2409268

* Revised in R2-2401990

Discussion:

Lenovo think the new field should have no -r18 or -v18xy suffix. ZTE think it should be -v18xy.

* [AT128][403][POS] ASN.1 formalities in R2-2409618 (CATT)

Scope: Check the format of the new field name in R2-2409618 and align with the guidance of the RRC rapporteur. Also address the coversheet (should be impact only to NR SA).

Intended outcome: Agreed CR (without CB if possible) in R2-2410990

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2410990](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410990%20Corrections%20of%20location%20TimeStamp,%20RSTD%20and%20RTOA%20report.docx) Corrections of location time stamp, RSTD and RTOA report CATT CR Rel-18 38.355 18.3.0 0008 4 F NR\_pos\_enh2-Core R2-2409268

* Agreed

[R2-2409683](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409683.docx) RRC correction on NR sidelink positioning Philips International B.V., Ericsson CR Rel-18 38.331 18.3.0 4940 2 F NR\_pos\_enh2-Core R2-2408864

* Agreed

[R2-2409916](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409916%20Miscellaneous%20corrections%20to%20SLPP%20specification.docx) Miscellaneous corrections to SLPP specification Intel Corporation CR Rel-18 38.355 18.3.0 0011 1 D NR\_pos\_enh2-Core R2-2409254

* Impact only to NR SA
* Agreed with this change as R2-2410991

[R2-2410215](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410215%20Rapp%20CR%20for%20IDLE%20mode%20procedure%20for%20R18%20positioning.docx) Rapporteur CR to IDLE mode procedure for R18 Positioning Huawei, HiSilicon, Phillips CR Rel-18 38.304 18.3.0 0422 - F NR\_pos\_enh2

* Impact only to NR SA
* Spelling of Philips to be corrected
* Agreed with this change as R2-2410992

[R2-2410992](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410992%20Rapp%20CR%20for%20IDLE%20mode%20procedure%20for%20R18%20positioning.docx) Rapporteur CR to IDLE mode procedure for R18 Positioning Huawei, HiSilicon, Phillips CR Rel-18 38.304 18.3.0 0422 1 F NR\_pos\_enh2

* Revised due to tdoc clash
* Agreed as R2-2411112

[R2-2411112](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411112%20Rapp%20CR%20for%20IDLE%20mode%20procedure%20for%20R18%20positioning.docx) Rapporteur CR to IDLE mode procedure for R18 Positioning Huawei, HiSilicon, Phillips CR Rel-18 38.304 18.3.0 0422 2 F NR\_pos\_enh2

* Agreed

[R2-2410494](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410494.docx) Miscellaneous RRC Positioning Correction Ericsson CR Rel-18 38.331 18.3.0 5061 1 F NR\_pos\_enh2-Core R2-2408935

* Revised in R2-2411061

[R2-2411061](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411061.docx) Miscellaneous RRC Positioning Correction Ericsson CR Rel-18 38.331 18.3.0 5061 1 F NR\_pos\_enh2-Core R2-2408935

* Agreed

[R2-2410495](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410495.docx) Correction of misplaced else condition of SL Positioning clause Ericsson CR Rel-18 38.321 18.3.0 1971 1 F NR\_pos\_enh2-Core R2-2409158

* Agreed

[R2-2410644](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410644%20Clarification%20on%20the%20maximum%20number%20of%20other%20UEs%20in%20sidelink%20positioning.docx) Clarification on the maximum number of other UEs in sidelink positioning vivo CR Rel-18 38.305 18.3.0 0178 1 F NR\_pos\_enh2-Core R2-2409251

* Impact only to NR SA
* Agreed with this change as R2-2410993

Coversheet revision

[R2-2410217](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410217%20Correction%20on%20SLPP.docx) Correction on SLPP Huawei, HiSilicon CR Rel-18 38.355 18.3.0 0014 - F NR\_pos\_enh2

* Revised in R2-2411079 (remove changemark on coversheet)

R2-2411079 Correction on SLPP Huawei, HiSilicon CR Rel-18 38.355 18.3.0 0014 1 F NR\_pos\_enh2

* Impact only to NR SA
* Mention the consequences if not approved in interoperability analysis
* Clauses affected should be 6.8, not the IE name
* Agreed with these changes as R2-2410994

Revised from AIP version

[R2-2410214](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410214%20Rapp%20CR%20for%20MAC%20spec%20for%20R18%20POS.docx) Rapporteur CR to MAC spec for R18 Positioning Huawei, HiSilicon, ASUSTek CR Rel-18 38.321 18.3.0 1996 - F NR\_pos\_enh2

* [AT128][404][POS] Rel-18 positioning MAC CR update (Huawei)

Scope: Check the CR in R2-2410214 and update if necessary.

Intended outcome: Agreed CR (without CB if possible) in R2-2411127 and summary in R2-2411126

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2411127](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411127%20Rapp%20CR%20for%20MAC%20spec%20for%20R18%20POS.docx) Rapporteur CR to MAC spec for R18 Positioning Huawei, HiSilicon, ASUSTek CR Rel-18 38.321 18.3.0 1996 1 F NR\_pos\_enh2

* Sentence on “the UE will be unable to comply” to be removed
* Formula to be deleted and inserted with revision marks in 5.8.3
* Revision number to be fixed
* Agreed with these changes as R2-2411181

Discussion:

Lenovo think “the UE will be unable to comply” should say the behaviour is unspecified. Ericsson think we could remove that sentence from the NOTE entirely.

Huawei agree with Ericsson. Lenovo think this would be OK.

R2-2411181 Rapporteur CR to MAC spec for R18 Positioning Huawei, HiSilicon, ASUSTek CR Rel-18 38.321 18.3.0 1996 2 F NR\_pos\_enh2

[R2-2411126](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411126%20Summary%20on%20the%20email%20discussion%20%5bAT128%5d%5b404%5d%20Rel-18%20positioning%20MAC%20CR.docx) Summary of email discussion [AT128][404] Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2

* Noted (email discussion [AT128][404])

### 7.1.1 Organizational

Including incoming LSs and rapporteur inputs.

Incoming LS with “take into account” action and no related document

[R2-2409508](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Docs\\R2-2409508.zip" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Docs\R2-2409508.zip) Reply LS on CSI-RS and SRS for spatial relation (R1-2409097; contact: ZTE) RAN1 LS in Rel-18 NR\_pos\_enh2-Core To:RAN2

* Noted

### 7.1.2 Stage 2

Impact to 38.300, 37.340, and 38.305.

This agenda item may be handled at lower priority.

[R2-2410497](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2410497.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2410497.docx) Miscellaneous corrections for Positioning Ericsson CR Rel-18 38.300 18.3.0 0938 - F NR\_pos\_enh2-Core

* Change to 9.2.6 to be removed
* Agreed with this change as R2-2411171

Discussion:

CATT agree with the principle, but they think there are spelling and format issues.

Huawei think the change to 9.2.6 is wrong: The RACH procedure here is just for legacy reasons to send the RRCResume. Ericsson think it should be captured because there is a new cause code with a new corresponding procedure.

Qualcomm see Ericsson’s point, because the generation of the resume request is different from the normal case where the UE really wants to resume.

vivo agree with Huawei that there is a high-level description and we do not need to clarify it here.

CATT wonder if the UE moves to a new cell and wants to send SRS, if it will RACH to sync with the new cell and get a new TA; in such a case, should we specify the RACH trigger here? They consider that this is just following RRCResume.

### 7.1.3 SLPP corrections

Impact to 38.355.

[R2-2409568](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2409568 Correction on Tx time stamp request in SL-RTT.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2409568 Correction on Tx time stamp request in SL-RTT.docx) Correction on tx timestamp request in SL-RTT ZTE Corporation CR Rel-18 38.355 18.3.0 0012 - F NR\_pos\_enh2

* “dummy” should be lowercase
* Description of associatedSL-PRS-TxTimeStampRequest to include the name of the response field
* Agreed with these changes as R2-2410995

Discussion:

Chair notes that “dummy” should be lowercase in the field description.

Qualcomm understand that we should also clarify what field is the response to the associatedSL-PRS-TxTimeStampRequest.

Lenovo think the field description should refer to the “receiving endpoint” rather than the UE. ZTE understand that it is only sent to the UE.

[R2-2409826](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409826%20Clarification%20on%20SLPP%20session%20ID%20existence%20in%20SLPP%20message%20between%20target%20UE%20and%20LMF.docx) Clarification on SLPP session ID existence in SLPP messages between target UE and LMF vivo discussion Rel-18 NR\_pos\_enh2-Core

* Noted

Proposal: RAN2 to Clarify that SLPP session ID is not included in the SLPP message between the target UE and the LMF, including the SLPP message embedded in the Supplementary RSPP message and the SLPP message directly exchanged in between.

Discussion:

Ericsson think we discussed this previously and decided to leave the stage 2 description as it is. They think there are cases where the session ID would be beneficial to the LMF. Qualcomm have the same understanding; they think vivo are right that for UE1, the LMF only needs the correlation ID, but identifying one of multiple sessions involving other UEs might be useful for the LMF.

Nokia agree with Ericsson and think we do not need to reopen the discussion, and they see the ID as needed for user identification.

vivo think this is not just a stage 2 description issue, and it is not clear how the UE and network will implement the feature with the current description. They understand that the LMF only needs the correlation ID and it should never need to know the session ID.

Ericsson agree that it is up to implementation whether the ID is included or used, but they think there are scenarios where it could be needed involving multiple sessions with the same target.

ZTE wonder if UE1 allocates the session ID to map to the correlation ID, if it eliminates the issue. vivo want to clarify that the UE and network may have different expectations about behaviour from the current wording.

ZTE understand that the CR would forbid the UE and LMF from using the session ID, and there may be cases where it makes sense, depending on the implementation of ID allocation.

[R2-2410132](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410132%20Corrections%20on%20FG%20R1%2041-1-19a%20and%2041-1-19b.docx) Corrections on capabilities for FG R1 41-1-19a and 41-1-19b in IE CommonSL-PRS-MethodsIEsProvideCapabilities Lenovo CR Rel-18 38.355 18.3.0 0013 - F NR\_pos\_enh2

* Revised in R2-2411121

Discussion:

Qualcomm indicate that we have this capability in individual methods as well, so we have to dummify it and implement the change there as well as in the common IEs.

* [AT128][408][POS] SLPP capability corrections (Lenovo)

Scope: Extend the changes of R2-2410132 to apply to the individual positioning methods.

Intended outcome: Agreed CR (without CB if possible) in R2-2411121

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2411121](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411121%20Corrections%20on%20FG%20R1%2041-1-19a%20and%2041-1-19b.docx) Corrections on capabilities for FG R1 41-1-19a and 41-1-19b in IE CommonSL-PRS-MethodsIEsProvideCapabilities Lenovo CR Rel-18 38.355 18.3.0 0013 1 F NR\_pos\_enh2

* Agreed

[R2-2410218](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410218%20Discussion%20on%20the%20issues%20in%20GAD%20in%20SLPP.docx) Discussion on the issues in GAD in SLPP Huawei, HiSilicon discussion Rel-18 NR\_pos\_enh2

* Noted

Proposal1: Send an LS to SA2/CT1/CT4 on the agreement for rangeAndDirection within provideLocationInformation and QoS within requestLocationInformation, and ask if there are any issues with them:

 Adopt high accuracy extended uncertainty as defined in clause 6.2b in TS 23032 for horizontal/vertical/range accuracy

 Adopt scale factor of accuracy is 1 degree; range 0 to 127 degrees for azimuth accuracy (angle uncertainty)

 Adopt scale factor of accuracy is 1 degree; range 0 to 63 degrees for elevation accuracy (angle uncertainty)

Proposal2: Send an LS to SA2/CT1/CT4 on the agreement for relative velocity with uncertainty, and ask if there are any issues with them:

 Radical velocity in the units of meters per second or centi-meters per second and transverse velocity in the units of degree per second or per 0.1 degree per second

 Radical velocity in the range of (-2049..2047) with negative sign indicating the opposite direction between point A and B; elevation and azimuth rate of change in the range of (0..1023)

 Uncertainty for Azimuth and Elevation Rate Of Change in the units of transverse velocity and range in (0..255)

Proposal3a: Support normal uncertainty in clause 6.2 and High Accuracy Uncertainty in Section 6.2a in TS 23.032 for the horizontal/vertical accuracy in the QoS within requestLocationInformation.

Proposal3b: Support uncertainty indication for the velocity and relative velocity in the QoS within requestLocationInformation.

Proposal4: Down-select from the following WFs from RAN2’s perspective:

 Option1: Remove the coding format description for rangeAndOrDirection, relativeLocationEstimate, and relativeVelocityWithUncertainty while only cite the SA2 spec TS 23.032

 Option2: Keep the current description in RAN2.

Discussion:

Qualcomm are uncertain what involvement SA2 and CT groups would have. They understand that there are no CN specs for range, relative location, direction, etc.

Huawei note that the current SLPP points to an SA2 spec. Qualcomm indicate this is just to avoid code duplication in SLPP.

Ericsson wonder if this could be directly brought up in SA2.

Huawei think the LMF can request a relative location in the LMF-involved case. Qualcomm think this is allowed for the LMF, but the AMF will never request it.

Huawei understand that the LCS client can request relative location. Qualcomm think there is nothing to support it in the LocationRequest.

Ericsson think this is more of an SA2 discussion.

### 7.1.4 LPP corrections

Impact to 37.355.

[R2-2409619](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2409619 Correction of nr-DL-PRS-RSCPD-ReportingRRC-Inactive in NR-DL-TDOA-MeasurementCapability.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2409619 Correction of nr-DL-PRS-RSCPD-ReportingRRC-Inactive in NR-DL-TDOA-MeasurementCapability.docx) Correction of nr-DL-PRS-RSCPD-ReportingRRC-Inactive in NR-DL-TDOA-MeasurementCapability CATT CR Rel-18 37.355 18.3.0 0528 - F NR\_pos\_enh2-Core

* Revised in R2-2411122

Discussion:

Qualcomm think the suffix should be -v18xy and there are editorial/formatting issues with the ASN.1. They also think the field description needs to move to the end of the table.

vivo agree with the CR, but they think the field description may be misleading.

CATT wonder if RAN1 specified that the measurement will be reported in connected mode. vivo indicate that RAN1 just said the measurement is taken in RRC\_INACTIVE, not that it is necessarily reported in RRC\_INACTIVE.

Xiaomi think we could check the feature list.

Qualcomm understand that the reporting does not matter for LPP; we just have the capability of the UE to measure in RRC\_INACTIVE. They checked 38.215 and they understand the intention is for measuring in inactive and reporting in connected.

ZTE agree with vivo and Qualcomm that it should be measuring rather than reporting, and they think the field name should be changed accordingly.

CATT think the field description was copied from the parameter list.

* [AT128][409][POS] Missing ASN.1 field for RSCPD measurement capability in RRC\_INACTIVE (CATT)

Scope: Check and revise the CR in R2-2409619, taking the feature list into account.

Intended outcome: Agreed CR (without CB if possible) in R2-2411122

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2411122](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411122%20Correction%20of%20NR-DL-TDOA-MeasurementCapability%20and%20NR-Multi-RTT-MeasurementCapability.docx) Correction of NR-DL-TDOA-MeasurementCapability and NR-Multi-RTT-MeasurementCapability CATT CR Rel-18 37.355 18.3.0 0528 1 F NR\_pos\_enh2-Core

* Agreed (email discussion [AT128][409])

[R2-2410401](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410401.docx) Correction for the UE capability on PosSRS-BWA-RRC-Inactive Xiaomi CR Rel-18 37.355 18.3.0 0540 - F NR\_pos\_enh2-Core

* Revised in R2-2411123

Discussion:

Lenovo indicate that this issue was discussed in the common session for the RRC/38.306 CRs, but here they think that we do not need to adopt exactly what RAN1 concluded. They think this can be addressed more clearly as in their TP in R2-2410133.

Nokia prefer the TP from Lenovo.

* [AT128][410][POS] UE capability on PosSRS-BWA-RRC-Inactive (Xiaomi)

Scope: Revise the CRs in R2-2410401 and R2-2410402 in line with the TPs from R2-2410133.

Intended outcome: Agreed CRs (without CB if possible) in R2-2411123 / R2-2411124

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2411123](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411123.docx) Correction for the UE capability on PosSRS-BWA-RRC-Inactive Xiaomi CR Rel-18 37.355 18.3.0 0540 1 F NR\_pos\_enh2-Core

* Agreed (email discussion [AT128][410])

[R2-2411124](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411124.docx) Correction for the UE capability on PosSRS-BWA-RRC-Inactive Xiaomi CR Rel-18 38.306 18.3.0 1212 1 F NR\_pos\_enh2-Core

* Agreed (email discussion [AT128][410])

### 7.1.5 RRC corrections

Impact to 38.331 and 38.306.

[R2-2409569](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2409569 Correction on the dedicated pool interest frequency request in SUI.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2409569 Correction on the dedicated pool interest frequency request in SUI.docx) Correction on the dedicated pool interest frequency request in SUI ZTE Corporation CR Rel-18 38.331 18.3.0 5098 - F NR\_pos\_enh2

* Merged into R2-2410498

Discussion:

ZTE indicate that only the second change is needed.

Ericsson think this is somewhat editorial and could be merged into R2-2410498 or R2-2409639.

[R2-2409620](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409620%20Clarification%20on%20the%20activation%20mechanism%20of%20srs-PosConfigOrActivationReq.docx) Clarification on the activation mechanism of srs-PosConfigOrActivationReq CATT, Ericsson CR Rel-18 38.331 18.3.0 5103 - F NR\_pos\_enh2-Core

* Postponed

Discussion:

Samsung understand that the CR is to allow the UE to use the resume procedure to request activation, but they think it is not an essential correction but more of a new feature. They understand that activation can be triggered through the LMF by an Event Report and NRPPa, and they see nothing broken.

Qualcomm indicate that Samsung describe the legacy Rel-17 behaviour, and this is for the validity area, where we agreed previously to use the same cause code for activation requests. However, they think there are mistakes in the change: The condition “no stored srs-PosRRC-InactiveValidityAreaPreConfigList for the camped cell exists” is only met for the configuration case, not activation.

Samsung consider that the activation we discussed up to now is activation of a preconfiguration, and if we add this functionality there is no way for the gNB to report the activation of SP-SRS to LMF, so the LMF cannot ask neighbouring TRPs to measure it.

CATT indicate that RAN3 just agreed a CR allowing the gNB to indicate the activation, and they see this as an alignment CR.

Ericsson think there are three cases: non-preconfigured area periodic or SP-SRS, and preconfigured area. For SP-SRS they thought the existing text is correct.

vivo agree with the intention of the CR, but they agree with Qualcomm that the new condition is in the wrong paragraph and a new paragraph is needed.

CATT think we can reach a common understanding that SP-SRS can be activated both in preconfigured and non-preconfigured cases. For the preconfigured case, the activation request is in the paragraph before the change in the CR.

vivo wonder if there should be a Rel-17 change for the non-preconfigured case. CATT indicate non-preconfigured with validity area is introduced in Rel-18.

Samsung would like time to check the RAN3 CR.

[R2-2409639](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409639_CR5104_38.331%20Correction%20for%20NW%20restriction%20on%20dedicated%20SL-PRS%20resource%20pool.docx) Correction on NW restriction for dedicated SL-PRS resource pool vivo, Ericsson CR Rel-18 38.331 18.3.0 5104 - F NR\_pos\_enh2-Core

Discussion:

InterDigital think “colliding” may not be the right word; they would prefer “overlapping”. vivo indicate that the language came from RAN1.

Qualcomm note that the impact analysis is missing.

ZTE ask if “S-SSB” is correct. vivo indicate this also came from RAN1.

ZTE think “is not expected to be configured” should be “is not configured”. vivo understand that the network can configure it, but the UE will ignore the problematic configurations. ZTE think in this case it should only be captured in the RAN1 spec.

Ericsson also thought it should be captured in RAN1, but apparently it has not been, and they understand from RAN1 colleagues that it would be OK to capture in RAN2 as network guidance. They are OK with the CR as it is.

vivo indicate “S-SSB” is used elsewhere in RRC, and they do not think we should restrict network behaviour too strictly.

Chair wonders if the language is clear for implementation. Ericsson think we could put something in the coversheet.

Chair suggests “if dedicated SL-PRS resource pool is configured in the slots colliding with the slots (pre)configured for any other resource pool(s) or S-SSB resource(s) in other SL carriers, the UE does not use the colliding slots”. InterDigital think we should not specify both sides.

Ericsson think this would be a wrong network configuration under the RAN1 agreement.

Huawei think this should be captured in RAN1. vivo indicate that RAN1 agreed to have no related specification work.

* [Post128][404][POS] LS to RAN1 on SL-PRS resource pool configuration (vivo)

Scope: Draft an LS to RAN1 inquiring as to the intention of the agreement quoted in R2-2409639, to clarify whether the restriction should be documented as a network or UE behaviour.

Intended outcome: Approved LS

Deadline: Short (not for RP)

[R2-2409656](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409656_CR5106_38.331%20Correction%20for%20UE%20indicating%20its%20preference%20frequencies%20for%20sidelink%20positioning%20in%20SUI.docx) Correction for UE indicating its preference TX/RX frequencies for sidelink positioning in SUI vivo CR Rel-18 38.331 18.3.0 5106 - F NR\_pos\_enh2-Core

* Styles in the procedure text to be fixed
* Agreed with this change as R2-2411130

[R2-2410216](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410216%20Correction%20for%20positioning%20SRS%20CA%20in%20RRC_INACTIVE.docx) Correction for positioning SRS CA in RRC\_INACTIVE Huawei, HiSilicon, Ericsson, Samsung CR Rel-18 38.331 18.3.0 5150 - F NR\_pos\_enh2

* CR to be indicated as mandatory on coversheet
* AggregatedSRS-PosAdditionalCarrier-r18 to be replaced with a single SRS-PosConfigPerULCarrier
* Names with “RRC-AggBW-Inactive” to be changed to “RRC-InactiveAggBW”
* Agreed with these changes as R2-2411129

Discussion:

ZTE agree with the principle but think SUL should not be included; they understand that it cannot perform SRS aggregation. Huawei intend to align with the configuration in the main CA part.

CATT think SRS-PosConfigPerULCarrier-r18 includes two SCSs and two frequencies, one explicitly and one in the BWP. Huawei indicate that the BWP is only used for point A, not to configure SCS, and they understand that this is the same as legacy. CATT think there should be some description.

vivo wonder if there should be a UE capability. Huawei would be ok with documenting the CR as mandatory.

CATT agree with ZTE about the SUL configuration. Ericsson are also fine with excluding SUL.

Huawei think we do not need to say if it is NUL or SUL, just a frequency within a band, and the additional carrier frequency should be the same as the main carrier.

ZTE understand that the Rel-18 additional carrier is an addition over Rel-17, but they do not think there should be SRS aggregation on the SUL, so it only applies when the Rel-17 carrier is NUL.

Huawei agree that you cannot perform CA across different carriers and there should only be one carrier, but they still think it does not need to say NUL/SUL.

CATT think the CR explicitly includes a SEQUENCE of NUL and SUL. Huawei can update to fix this.

[R2-2410224](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410224%20Correction%20to%20sidelinkUEInformation%20for%20SL%20POS.docx) Correction to sidelinkUEInformation for SL POS Huawei, HiSilicon CR Rel-18 38.331 18.3.0 5151 - F NR\_pos\_enh2

* Not pursued

[R2-2410498](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410498%20SLRRC.docx) Sidelink RRC Positioning Correction Ericsson, vivo CR Rel-18 38.331 18.3.0 5165 - F NR\_pos\_enh2-Core

* Second change to be removed
* R2-2409569 to be merged in
* Agreed with these changes as R2-2411170

Discussion:

vivo are not sure of the exact intention of the second change. They think carrier selection is more of a MAC issue. Huawei have the same view and think it is already captured in MAC.

Ericsson intended for the carrier to be aligned between upper and lower layers; they think the RRC layer should do the actual selection.

Huawei indicate carrier selection is already in the MAC layer.

[R2-2410584](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410584%20-%20RRC%20correction%20on%20NR%20sidelink%20positioning%20R18.docx) RRC correction on NR sidelink positioning Philips International B.V. CR Rel-18 38.331 18.3.0 5174 - F NR\_pos\_enh2-Core

* First change to be removed (can be checked in the sidelink session)
* Agreed with this change (tdoc number to be requested from secretary)

### 7.1.6 MAC corrections

Impact to 38.321.

[R2-2410176](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2410176 Correction on prioritization between SR and SL-PRS transmission.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2410176 Correction on prioritization between SR and SL-PRS transmission.docx) Correction on prioritization between SR and SL-PRS transmission ASUSTeK CR Rel-18 38.321 18.3.0 1992 - F NR\_pos\_enh2

* Agreed

Discussion:

Huawei think the change is correct but would suggest a different formulation, outside the sidelink communication paragraph; they do not have a strong view.

InterDigital agree with Huawei and think a separate description would be good.

vivo find the comments confusing; this is a general requirement and it is not clear why we would give SL-PRS a separate paragraph.

### 7.1.7 Corrections to other specifications

Impact to any specifications not identified above.

[R2-2410133](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2410133 Correction description of R1 FG 41-4-8.doc" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2410133 Correction description of R1 FG 41-4-8.doc) Correction on the capability description for posSRS-BWA-RRC-Inactive-r18 (FG R1 41-4-8) Lenovo discussion Rel-18 NR\_pos\_enh2

* Noted

[R2-2410402](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410402.docx) Correction for the UE capability on PosSRS-BWA-RRC-Inactive Xiaomi CR Rel-18 38.306 18.3.0 1212 - F NR\_pos\_enh2-Core

* Handled in discussion [AT128][410]
* Revised in R2-2411124

## 7.5 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: 0TU

Tdoc Limitation: 1 tdoc

1 additional tdoc on top of the limit is allowed for co-sourced contribution with 3 or more companies.

Minor and editorial issues should be coordinated with the appropriate spec rapporteur and submitted by rapporteur company together with any additional corrections the rapporteur company may have. Larger issues can be discussed based on contributions/individual CRs.

### 7.5.0 In-principle agreed CRs

Contributions agreed in principle at RAN2#127bis.

[R2-2409631](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409631_CR0141_TS38.323_Corrections%20on%20security%20for%20L2%20U2U%20relay_Rel-18.docx) Corrections on security for L2 U2U relay vivo CR Rel-18 38.323 18.3.0 0141 1 F NR\_SL\_relay\_enh-Core R2-2408374

* Revised in R2-2410918

[R2-2410918](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410918_CR0141_38.323_Corrections%20on%20security%20for%20L2%20U2U%20relay_Rel-18.docx) Corrections on security for L2 U2U relay vivo CR Rel-18 38.323 18.3.0 0141 2 F NR\_SL\_relay\_enh-Core R2-2408374

* Agreed

[R2-2409682](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409682.docx) RRC correction on NR SL U2U relay operation Philips International B.V. CR Rel-18 38.331 18.3.0 5048 2 F NR\_SL\_relay\_enh-Core R2-2409263

* Agreed

[R2-2409735](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409735_38331_CR5081_%20Clarification%20for%20ul-DataSplitThreshold%20setting%20in%20multi-path%20relay.docx) Clarification for ul-DataSplitThreshold setting in multi-path relay OPPO CR Rel-18 38.331 18.3.0 5081 1 F NR\_SL\_relay\_enh-Core R2-2409118

* Agreed

[R2-2409759](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409759%20Miscellaneous%20CR%20for%20Rel-18%20SL%20relay%20enhancement.docx) Miscellaneous CR for Rel-18 SL relay enhancement Huawei, HiSilicon CR Rel-18 38.331 18.3.0 4994 2 F NR\_SL\_relay\_enh-Core R2-2409262

* Agreed

[R2-2409760](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409760%20Correction%20to%20error%20handling%20for%20U2U%20operation.DOCX) Correction to error handling for U2U operation Huawei, HiSilicon CR Rel-18 38.351 18.2.0 0037 2 F NR\_SL\_relay\_enh-Core R2-2409264

* Agreed

Late AIP CR submitted at end of meeting

R2-2411185 Miscellaneous and editorial changes for sidelink relay enhancement LG Electronics Inc., ZTE Corporation, Sanechips, Philips International B.V. CR Rel-18 38.300 18.3.0 0923 1 F NR\_SL\_relay\_enh-Core

* [Post128][405][Relay] Check of late AIP stage 2 CR on Rel-18 relay (LG)

Scope: Check the AIP CR in R2-2411185 and confirm that it can be agreed.

Intended outcome: Agreed CR

Deadline: Short (for RP)

### 7.5.1 Organizational

Including incoming LSs and rapporteur inputs.

### 7.5.2 Stage 2 corrections

Impact to 38.300.

[R2-2410197](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2410197_U2URelays_LocalIDAssignment.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2410197_U2URelays_LocalIDAssignment.docx) U2U Relays, Local ID Assignment Ericsson discussion Rel-18 R2-2408879

* Noted

Discussion:

Huawei think it is already clear that this is UE implementation.

LG note that there is a similar note in the QoS split.

ZTE think we normally only specify what the UE should do, and what is not captured is automatically up to UE implementation; we cannot capture all implementation behaviour.

Ericsson note that we had an agreement that it was up to UE implementation.

Samsung think the NOTE is useful and we have similar notes in other places.

MediaTek think there is room for confusion and the NOTE is helpful.

Apple think we concluded that there would be no specification impact, which in hindsight was not quite right because there is indirect impact to SRAP.

* [AT128][407][Relay] NOTE on U2U local ID allocation (Ericsson)

Scope: Draft a CR based on the TP in R2-2410197.

Intended outcome: Agreed CR (without CB if possible) in R2-2411000

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2411000](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411000%20-%2038.300_0944_Rel18_U2URelays_LocalIDAssignment.docx) U2U Relays, Local ID Assignment Ericsson CR Rel-19 38.300 18.3.0 0944 - F NR\_SL\_relay\_enh-Core

* Revised in R2-2411176 (email discussion [AT128][407])

[R2-2411176](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411176%20-%2038.300_0944_Rel18_U2URelays_LocalIDAssignment.docx) U2U Relays, Local ID Assignment Ericsson CR Rel-19 38.300 18.3.0 0944 1 F NR\_SL\_relay\_enh-Core

* Agreed (email discussion [AT128][407])

### 7.5.3 Control plane corrections (including UE capabilities)

Impact to 38.331, 38.304, and 38.306.

[R2-2409853](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2409853 Discussion on the terminology of peer UE.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2409853 Discussion on the terminology of peer UE.docx) Clarification on the Terminology of Peer UE CATT discussion Rel-18 NR\_SL\_relay\_enh-Core

* Noted

Proposal 2: Suggest RAN2 to discuss how to handle the issue that the same terminology of peer UE refers to different types of UEs in same/different sections:

- Option 1: The peer UE only refers to Rel-16 V2X target UE and Rel-17 U2N Relay UE (same principle as in the Rel-17 specification);

- Option 2: The peer UE refers to the target UE which has direct PC5 or indirect PC5 connection with the UE which depends on the detailed procedure description. No need to identify it in the general description;

- Option 3: The peer UE refers to the target UE which has direct PC5 or indirect PC5 connection with the UE which depends on the detailed procedure description. A definition of peer UE or a NOTE can be added in the specification.

Discussion:

OPPO are not sure that there is a problem with the current text.

Samsung think option 2 is agreeable.

ZTE think “peer UE” should refer only to direct PC5 interface connection; otherwise they understand that we would have unwanted effects on other features like CA.

NEC note that we have not discussed whether relays would support CA, but we deleted the text that said it would not, so they think we do not need to indicate it explicitly here or change the terminology.

Huawei do not see a relation to CA.

* [AT128][405][Relay] Peer UE terminology (CATT)

Scope: Start from the TP in R2-2409853 and develop a CR in line with the principle of using “peer UE” in a consistent way for both direct and indirect connections.

Intended outcome: Agreeable CR in R2-2410996

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2410996](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\38331_CR5197_(Rel-18)_R2-2410996_Correction%20on%20the%20Terminology%20of%20Peer%20UE.docx) Corrections on the Terminology of Peer UE CATT CR Rel-18 38.331 18.3.0 5197 - D NR\_SL\_relay\_enh-Core

* Change to category F
* Affected architecture to be added
* Agreed with these changes as R2-2411182

[R2-2409960](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409960%20Correction%20on%20RRC_Relay_SRAP_procedure_v3.docx) Corrections on RRC SRAP configuration for L2 U2U Apple, ZTE CR Rel-18 38.331 18.3.0 5125 - F NR\_SL\_relay\_enh-Core

* Revised in R2-2410997

Discussion:

Apple indicate that some offline comments were received and changes are expected.

Nokia note that the DRB release operation is removed at the beginning of the changes, and they are not sure it is covered elsewhere.

Apple understand that when the DRB is added or removed, it will trigger the update to the PC5 RLC channel configuration, but they understand that there may be some aspects that need to be added still.

Huawei are not sure there is a problem with the existing text apart from some repetitive parts. They think we could live with no changes.

Nokia think something does need to change.

ZTE think this interacts with the peer UE terminology discussion. Samsung thought the terminology discussion was not directly related to how we organise the bearer configuration management.

OPPO think the CRs may have some relationship because Apple’s CR would remove some of the U2U sections that cause the terminological ambiguity; they understand that if Apple’s CR is agreed then we have aligned with CATT’s option 2.

Apple think the discussions could be kept separate and we look at any interactions when we come back.

* [AT128][406][Relay] U2U SRAP configuration (Apple)

Scope: Check and update the CR in R2-2409960.

Intended outcome: Agreeable CR in R2-2410997

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2410997](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410997%20Correction%20on%20RRC_Relay_SRAP_procedure_final.docx) Corrections on RRC SRAP configuration for L2 U2U Apple, ZTE CR Rel-18 38.331 18.3.0 5125 1 F NR\_SL\_relay\_enh-Core

* References to 5.8.9.7.x to be removed from coversheet
* Impacted architecture to be added (NR SA)
* Agreed with these changes as R2-2411183

[R2-2410614](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410614_Corrections%20for%20U2U%20relay%20measurements.docx) Corrections for U2U relay measurements ZTE Corporation, Sanechips, Huawei, Hisilicon, OPPO, CATT, Apple CR Rel-18 38.331 18.3.0 5175 - F NR\_SL\_relay\_enh-Core

* “if provided” to be added to the four instances of UE requirements to apply the coefficients
* Agreed with this change as R2-2410998

Discussion:

Nokia have a concern about backward compatibility: What will a UE do if it implements the CR and the network does not? ZTE understand that the new parameters only influence the result of the measurement, and without them the UE can still get a measurement result.

### 7.5.4 User plane corrections (including SRAP)

Impact to 38.351, 38.321, 38.322, and 38.323.

[R2-2410586](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202411 - RAN2_128, Orlando\\Extracts\\R2-2410586 RLC correction for multi-path relay with N3C.DOCX" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202411 - RAN2_128, Orlando\Extracts\R2-2410586 RLC correction for multi-path relay with N3C.DOCX) RLC correction for multi-path relay with N3C Huawei, HiSilicon CR Rel-18 38.322 18.1.0 0063 - F NR\_SL\_relay\_enh-Core

* Keep the first change only (first instance of “upper layers or N3C”)
* Add N3C to the acronym list
* Agreed with these changes as R2-2410999

Discussion:

Toyota are fine with the intention but think there is a typo, “SDU” that should be “SDUs” in NOTE 3.

OPPO are not sure if the change is correct; the description somehow implies a 1:1 mapping between RLC channels and logical channels, and may suggest that all packets from N3C will be delivered to a single logical channel.

Huawei indicate that the intention is that there is a connection between the RLC entity and N3C, not implying anything specific about channelisation.

Samsung understand that the CR does not change the mapping to logical channels.

Ericsson think the NOTE is not necessary from a configuration perspective; it is clear how to map the layers. They think the NOTE actually may not be correct as written in terms of how the configuration is structured.

ZTE suggest creating a new paragraph for the N3C case separately.

OPPO think it is hard to describe the relationship between N3C and the parts in 3GPP scope, and they would rather leave this part to stage 2.

Apple somewhat agree with Ericsson and think the NOTE does not really add anything.

Huawei see that in the current RLC spec, there is no connection between the N3C entity and the RLC entity, and they think this needs to be clarified for implementation teams.

Ericsson understand the implementation concern but reiterate that N3C is outside our scope and cannot be recognised in our specs as a layer; it is just an identifier.

Samsung generally agree with Ericsson that we do not specify non-3GPP behaviour, but here we have some interaction with our layers; however, they do not think the issue is serious enough to merit a CR.

Huawei do not intend for the CR to imply anything about configuration, just to define the flow of SDUs between the two entities. OPPO think stage 2 does this adequately.

Qualcomm think the CR is useful over the description in stage 2 for clarity. ZTE understand that the reason we left the mapping in stage 2 to UE implementation was that there was no way to agree on a fixed behaviour; they are afraid that putting more detail in can open a can of worms.

Huawei think we could leave out the note, but have some indication that the RLC entities exchange the SDUs via N3C.

Xiaomi think we could remove the NOTE and keep the normative changes.

OPPO’s concern is mainly for the normative text.

Huawei suggest a separate sentence saying “SDUs can also be exchanged between the RLC entities via N3C”. Nokia think this is not a good solution and the reason we had a NOTE now was that companies could not agree to normative text. Samsung understand that the intention of the NOTE was to avoid interfering with the meaning of the channel, and this would be a different scenario.

Ericsson think we have discussed this issue a lot and it is not very critical. They think the stage 2 is clear enough.

Xiaomi think we normally implement from the stage 3 spec.

## 7.8 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.

Clarification CRs should be discussed with spec rapporteurs of the topic prior to submission.

Time budget: 1 TU

Tdoc Limitation: 2

### 7.8.3 Other

RAN3, SA2, SA3, CT1 led items and others, e.g. eNPN, Slicing, NTN self evaluation issues, etc.

[R2-2410496](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410496%20LPPUP.docx) Introduction of LCS User Plane Ericsson, Intel Corporation, Huawei, HiSilicon, ZTE Corporation, vivo, Qualcomm Incorporated, Samsung, CATT CR Rel-18 38.305 18.3.0 0159 5 F TEI18 R2-2403538

* Revised in R2-2411066

[R2-2411066](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411066.docx) Introduction of LCS User Plane Ericsson, Intel Corporation, Huawei, HiSilicon, ZTE Corporation, vivo, Qualcomm Incorporated, Samsung, CATT, Nokia CR Rel-18 38.305 18.3.0 0159 5 F 5G\_eLCS\_Ph3 R2-2410496

* Agreed

# 8 Rel-19

## 8.13 NR sidelink multi-hop relay

(NR\_SL\_relay\_enh2; leading WG: RAN2; REL-19; WID: [RP-242349](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_105/Docs/RP-242349.zip))

Time budget: 1 TU

Tdoc Limitation: 3 tdocs

### 8.13.1 Organizational

LSs and rapporteur input, including workplan, etc.

### 8.13.2 Relay discovery and (re)selection

Enhancements to relay dscovery and (re)selection to support one additional hop relay (remote UE ⬄ first relay UE ⬄ last relay UE ⬄ gNB). Extensibility to a second additional hop in this WI is considered as a design criterion.

Email discussion summary

[R2-2410305](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410305_Report%20of%20%5bPOST127%5d%5b401%5d%5bRelay%5dMH%20relay%20discovery%20and%20(re)selection.doc) Report of [POST127][401][Relay] MH relay discovery and (re)selection LG Electronics Inc. discussion Rel-19

* Revised in R2-2410891

[R2-2410981](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410981_Report%20of%20%5bPOST127%5d%5b401%5d%5bRelay%5dMH%20relay%20discovery%20and%20(re)selection_v1.doc) Report of [POST127][401][Relay] MH relay discovery and (re)selection LG Electronics Inc. discussion Rel-19

[Conditions for discovery]

[EASY] Proposal 1a: A lower bound of Uu RSRP is not required for the intermediate Relay UE.

[DISCUSSION] Proposal 1b: For the intermediate Relay UE, RAN2 needs to discuss whether upper bound of Uu RSRP is required .

Discussion:

AT&T wonder if this relates to whether the UE could also be a last relay UE.

ZTE think no upper bound is needed; they understand that the UE cannot act as an intermediate and last relay UE at the same time, and as long as it cannot act as a last it can act as an intermediate.

NEC want to clarify that the Uu RSRP refers to the serving cell of the last relay UE.

Huawei think the intermediate relay UE should first connect to the last relay UE, then stop Uu monitoring.

vivo would like to have the upper bound to avoid being too close to cell centre (and for the last relay UE as well).

OPPO wonder if the intermediate relay UE will check the Uu RSRP threshold for the remote UE and how to capture the possible dependency on acting as a last relay UE. They think having a threshold defined is needed to clarify this dependency.

Apple think the lower bound of the last relay UE criterion can be the upper bound of the intermediate relay UE, so no need for a separate upper bound.

Samsung would like to have the upper bound to avoid selecting an intermediate node which is closer than the last relay node, which seems strange.

Xiaomi think the two relay UEs could be on different cells, so the intermediate could have high RSRP with a different cell from the last relay UE.

LG think in the inter-cell case, if the other cell does not support multihop, the intermediate UE should not engage in multihop.

InterDigital see value to the bound for some cases, but the network could choose not to configure it and it does no harm to have the option.

Fraunhofer think we should consider a relay UE with no Uu capability that gets all information through the relay link. Huawei understand that the relay must be authorised by the network first, which seems to require Uu operation.

Qualcomm think the intermediate UE’s serving cell may not support relaying, otherwise the UE could be the last relay UE.

LG understand that all relay UEs have to have the capability for Uu operations.

Huawei think the upper bound might be the same as for remote UE operation, since it has to operate as a remote UE first.

LG think for the inter-cell case, if the sidelink frequency is the same as Uu, a UE in a non-supporting cell cannot do sidelink/relay, so we have to exclude that case.

Kyocera think there would be overlap between the last relay UE and the intermediate relay UE bounds. They think we could have a requirement to check for operation as a last relay UE first.

Qualcomm think the in-coverage intermediate relay UE is largely for the case of non-supporting cells.

NEC think the scenario can be simplified to say that we do not support inter-cell cases at all.

Samsung wonder what the specification impact for the inter-cell cases would be.

ZTE wonder why we need to discuss whether the sidelink and Uu frequencies are the same; they think we have not developed enough background on this issue. If there is support they think it could be a WA.

Ericsson have somewhat the same concern as Qualcomm and think there is relation to downselection between approaches 1 and 2, e.g., if the intermediate UE is in idle/inactive.

OPPO understand that the proposed agreement is a basic principle and does not relate to approaches 1 and 2, for the case where the sidelink and Uu frequencies are the same; the UE should follow the cell configuration.

Qualcomm think the cell could have discovery/communication resources but not support of multihop, and then the intermediate relay UE could operate.

Apple think the intra-frequency sidelink/Uu case is legacy behaviour, and they wonder if we are looking at the case that the cell does not support multihop but provides the thresholds for single-hop. LG are concerned with a cell that does not support any relaying, and they think we have to follow legacy operations.

LG think is the cell supports multihop, it will presumably support legacy relaying.

Apple think in LG’s scenario, the sidelink frequency would have to be from preconfiguration.

Huawei think the main aim is coverage extension and we should not spend time on the inter-cell case. Qualcomm think inter-cell is the main use case and think there is no spec impact to support it.

OPPO have a similar understanding to Huawei, based on the Rel-17/18 principle, so they think the inter-cell case should be excluded.

AT&T agree with Huawei that the main use case is coverage extension, and inter-cell is an example of that but not the only one.

Ericsson think we should discuss the co-channel case first in the presence of relay support.

Apple think there is a bit of tension between the upper bound and the last proposed agreement on operating as a last relay UE; it seems to follow that the upper bound for the intermediate is the same as the lower bound of the last.

Agreements:

A lower bound of Uu RSRP is not required for the UE to operate as an intermediate Relay UE.

If a UE can operate as a last relay UE according to the restrictions configured by the network, it does not operate as an intermediate relay UE towards the same cell for any remote UE (i.e., minimise number of hops when possible). FFS if operation as an intermediate relay UE towards a different cell would be supported.

The network can configure an upper bound of Uu RSRP for the UE to operate as an intermediate relay UE. If the upper bound is not configured, there is no threshold, but this does not override the previous agreement. FFS if there would be additional restrictions in the case of no upper bound.

[EASY] Proposal 2: RAN2 understands that the intermediate Relay UE can initiate the announcement message when receiving announcement message or, at least, when the intermediate Relay UE has the information for the announcement message provided by the last Relay UE.

Discussion:

CATT think we need to clarify SA2 conclusions related to this issue on the establishment of PC5-S connection.

Qualcomm think P2 is in SA2 scope and they already have a procedure.

[EASY] Proposal 3: The discovery announcement message can be forwarded at the intermediate Relay UE when the SD-RSRP or SL-RSRP between the last/parent intermediate Relay UE and itself is above a configured threshold.

Further clarification can be discussed in RAN2.

Discussion:

Qualcomm agree with CATT’s understanding that a PC5-S connection is required, and therefore this proposal is not needed.

InterDigital think P2 is harmless and the wording is agnostic to the status of the PC5-S connection, but receiving the announcement message should take place on a PC5-S connection.

OPPO think the intermediate relay will act as a remote UE first and decide if it will do multihop.

Kyocera have the same understanding that there needs to be a PC5-S connection.

Huawei have a strong concern on P3; they see that U2N relay is very different from this scenario and we should not use sidelink RSRP as a criterion for forwarding the messages, and first responder cases may need to work even when the link is marginal.

ZTE think establishing the PC5-S connection first is unreasonable before sending a broadcast message; they think we need to send an LS to SA2 for clarification. LG agree with ZTE and think the AS layer needs to check the link quality.

InterDigital understand the UE relies on link quality to avoid setting up a link with a bad SL connection, even for public safety use cases. Qualcomm understand that having the PC5-S connection is enough.

Qualcomm understand that in SA2, the PC5-S connection is supposed to guarantee that the link is OK.

ZTE think when establishing the PC5-S connection, the link quality is not checked.

Lenovo think similar issues were discussed in the previous release and the additional link quality checks were not agreed.

vivo think we should check with SA2.

[EASY] Proposal 4: The following model B discovery forwarding condition can be baseline for further discussion:

- For Model B, the intermediate Relay UE forwards the solicitation message only if the PC5 RSRP between the Remote UE (or intermediate Relay UE) and the intermediate Relay UE is above a threshold.

- For Model B discovery, upon discovery response messages reception, the Remote UE considers an intermediate Relay UE(s) as a candidate first relay UE(s) along the path to the last Relay UE if the SD-RSRP towards the first intermediate Relay UE is above a configured threshold. (modified by Ericson’s comment)

- For Model B, no AS criterion is needed for the intermediate Relay UE(s) to forward the response message to the Remote UE.

[EASY] Proposal 5a: For the discovery announcement message initiation (in the case of model A), the last Relay UE doesn’t need to check PC5 AS condition.

[DISCUSSION] Proposal 5b: In the case of discovery model B, the following two options can be further discussed

(option 1) For the discovery response message transmission (in the case of model B), the last Relay UE needs to check the PC5 AS condition before sending discovery response message to the (first) intermediate Relay UE.

(option 2) As the legacy Rel-17 U2N relay, the U2N Relay UE doesn’t have any PC5 AS conditions for transmitting the announcement/response discovery message. The same principle can be applied to the last Relay UE.

[(Re)selection triggering conditions]

[EASY] Proposal 6a: The following relay selection triggering conditions for Remote UE are supported for the multi-hop relay operation.

[Relay selection triggering conditions for Remote UE]

q) If the Remote UE has no serving cell;

j) If the Remote UE does not have a selected intermediate Relay UE;

[ESAY] Proposal 6b: The following relay re-selection triggering conditions for Remote UE are supported for the multi-hop relay operation at least when there is only one intermediate Relay UE.

[Relay re-selection triggering conditions for Remote UE]

q) If the SL-RSRP of the currently selection intermediate Relay UE is below a configured threshold;

r) If the SD-RSRP of the currently selected intermediate Relay UE is below a configured threshold;

s) If the upper layer indicates not to use the currently selected intermediate Relay UE;

t) If the upper layer of the selected intermediate Relay UE requests the release of the PC5-RRC connection;

u) If the RLF is detected on the PC5-RRC connection with the current intermediate Relay UE;

v) If the Remote UE receives a notification message from the intermediate Relay UE caused by one of the following:

h-1) if intermediate Relay UE detects PC5 RLF between intermediate Relay UE and last Relay UE (or serving intermediate Relay UE)

h-2) if intermediate Relay UE receives RRCReconfiguration message for HO (if the intermediate Relay UE is in RRC\_CONNECTED)

h-3) if intermediate Relay UE performs cell reselection

h-4) if intermediate Relay UE fails Uu RRC connection establishment/Resume via last Relay UE

h-5) if intermediate Relay UE receives upper layers request the release of the PC5-RRC connection between intermediate Relay UE and last Relay UE (or serving intermediate Relay UE)

[EASY] Proposal 6C: Following condition can be additionally considered for relay selection

- If direct Uu signal strength of current serving cell of the Remote UE is below a configured signal strength threshold.

[EASY] Proposal 6D: The following solution is not considered in this release:

- The last Relay UE generates notification message when the Uu RSRP is decreased under a configured threshold

[EASY] Proposal 6E: The following solution is not considered in this release:

- The intermediate Relay UE generates notification message when the PC5 RSRP is decreased under a configured threshold.

[Quite EASY] Proposal 7: The notification message generated by last Relay UE or by (not first) intermediate Relay UE can be [forwarded/delivered] toward the Remote UE via the first intermediate Relay UE.

[EASY] Proposal 8: Any relay (re)selection triggering condition is not specified for intermediate Relay UE.

[(Re)selection criteria]

[EASY] Proposal 9: Rel-18 relay (re)selection criteria can be reused for relay (re)selection criteria for the Rel-19 multi-hop.

- SL-RSRP and SD-RSRP can be used for relay selection/reselection criteria.

- In both cases, it is left to remote UE implementation whether to use SL-RSRP or SD-RSRP for relay (re)selection trigger evaluation in case of no data transmission.

- Besides the PC5 link quality, RAN2 does not pursue other AS criteria for relay (re)selection.

[Scenarios and UE roles]

[EASY] Proposal 10: The last Relay UE of a multi-hop relay operation can also act as U2N Relay UE of a single-hop relay operation simultaneously.

[Quite EASY] Proposal 11: An intermediate Relay UE in multi-hop relay operation can also act as a Remote UE in single-hop relay operation as long as there is only single PC5 connection between Last Relay UE and intermediate Relay UE for both multi-hop and single-hop relay operation.

[Quite EASY] Proposal 12: An Intermediate Relay UE can serve multiple multi-hop indirect paths of different Remote UEs. The intermediate Relay UE(also can act as an Remote UE) cannot support multiple PC5 unicast links with same/different last/U2N/parent intermediate Relay UE(s) for support of different indirect paths. One intermediate Relay UE should have only one single PC5 unicast link for one physical intermediate/last Relay UE and only single PC5 unicast link for one physical Remote UE.

Discussion:

Qualcomm think the intermediate relay UE could support multi-path for different remote UEs. They see some dependency on the control plane approach.

InterDigital think we can agree for the remote UE.

OPPO think Qualcomm’s concern should be OK since the second sentence already calls out that the intermediate relay UE can also act as a remote UE.

[Supported and unsupported cases of multiple connections, edited by chair for clarity]

[EASY] Proposal 13: following cases are supported:

- One last Relay UE can have two connections with one intermediate Relay UE and one Remote UE (the intermediate Relay UE and Remote UE are physically different UE).

- Two physically different Remote UE(s) can have each indirect path via the same intermediate Relay UE and the same last Relay UE.

FFS if the last relay UE can use the same L2ID for both of the connections in either case.

[EASY] Proposal 14: following cases are not supported:

- Physically one intermediate Relay UE has two PC5 unicast link with the physically one last Relay UE.

- Physically different two Remote UEs have each indirect connection via physically one intermediate Relay UE. The intermediate Relay UE has two PC5 unicast link with the physically one last Relay UE

- One intermediate Relay UE, which also acts as Remote UE, can have two different indirect connection via physically different last Relay UE

- Two physically different Remote UE can have each indirect path via the physically same intermediate Relay UE and physically different last Relay UE(s). i.e., physically one intermediate Relay UE has connections with physically two different last Relay UE(s) to support physically different Remote UE(s).

- Two different indirect links at the physically same Remote UE can have connections with the gNB via the physically same intermediate Relay UE and physically same last Relay UE.

- Two different indirect links at the physically same Remote UE can have connections with the gNB via the physically same intermediate Relay UE and physically different last Relay UE.

- (2.5D-1) One intermediate Relay UE, which also acts as Remote UE, can have two different indirect connection via physically different last Relay UE. Each last Relay UE has a connection with different cells in the same gNB.

- (2.5D-2) Two physically different Remote UE can have each indirect path via the physically same intermediate Relay UE and physically different last Relay UE(s) i.e., physically one intermediate Relay UE has connections with physically two different last Relay UE(s) to support physically different Remote UE(s). Each last Relay UE has a connection with different cells in the same gNB.

- (2.5D-3) Two different indirect links at the physically same Remote UE can have connections with the gNB via the physically same intermediate Relay UE and physically different last Relay UE. Each last Relay UE has a connection with different cells in the same gNB.

Agreements:

The following cases are supported for L2 multihop relay:

- One last Relay UE can have two connections with one intermediate Relay UE and one Remote UE (the intermediate Relay UE and Remote UE are physically different UE).

- Two physically different Remote UE(s) can have each indirect path via the same intermediate Relay UE and the same last Relay UE.

FFS if the last relay UE can use the same L2ID for both of the connections in either case.

Cases with two indirect paths to the gNB for the same remote UE are not supported.

An Intermediate Relay UE can serve multiple multi-hop indirect paths of different Remote UEs.

If the intermediate Relay UE also is acting as a Remote UE, it cannot support different indirect paths to the gNB with same/different last/U2N/parent intermediate Relay UE(s) based on different PC5 unicast links.

Other contributions

[R2-2410032](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410032_Discussion%20on%20multi-hop%20Relay%20discovery%20and%20(re)selection.doc) Discussion on multi-hop Relay discovery and (re)selection ZTE Corporation, Sanechips discussion Rel-19 NR\_SL\_relay\_multihop-Core

* Noted

Proposal 2: RAN2 sends LS to ask SA2 to clarify the following questions:

- whether an intermediate relay needs to establish PC5 link with the relay from which the discovery announcement message is received before sending/forwarding the discovery announcement message.

- whether an intermediate relay can send/forward discovery announcement messages for different RSCs/last relay UEs(if Root relay info is included) or need to select a parent relay with a RSC and only sending/forwarding the discovery announcement message for the selected RSC.

- whether an intermediate relay can have two parent relays towards different last relay UEs/gNBs for different remote UEs.

Discussion:

Qualcomm think the SA2 spec is clear and companies can check internally.

Huawei think we could skip the third bullet on cross-path topologies.

OPPO think SA2 will not understand the second question without some background.

LG think we could skip the second question as well; they understand that this case was excluded at plenary. ZTE think it relates to the architecture and they would like to check whether it is possible.

Agreement:

RAN2 sends LS to ask SA2 to clarify whether an intermediate relay needs to establish PC5 link with the relay from which the discovery announcement message is received before sending/forwarding the discovery announcement message.

* [AT128][411][Relay] LS to SA2 on relay discovery announcement (ZTE)

Scope: Draft an LS to ask SA2 to clarify whether an L2 intermediate relay needs to establish PC5 link with the relay from which the discovery announcement message is received before sending/forwarding the discovery announcement message.

Intended outcome: Approved LS (without CB if possible) in R2-2411125

Deadline: Wednesday 2024-11-20 1600 EST

[R2-2411125](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2411125%20LS%20to%20SA2%20on%20relay%20discovery%20announcement.docx) LS to SA2 on relay discovery announcement ZTE Corporation LS out Rel-19 NR\_SL\_relay\_multihop-Core To:SA2

* WI code to be changed to NR\_SL\_relay\_multihop-Core
* Approved with this change as R2-2411184

[R2-2410827](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410827_RelayDisc&Resel.docx) Considerations on relay discovery and (re)selection Samsung discussion Rel-19 NR\_SL\_relay\_multihop-Core

Proposal 4: RAN2 is kindly asked to discuss whether the hop count information is included in the discovery message.

Proposal 5: RAN2 is kindly asked to discuss whether there is need to limit the number of hops.

[R2-2410587](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410587%20Relay%20discovery%20and%20(re)selection%20for%20Multi%20hop%20Relays.docx) Relay discovery and (re)selection for multi-hop Relay Huawei, HiSilicon discussion Rel-19 NR\_SL\_relay\_multihop-Core

Proposal 2: Reuse the Rel-17 direct discovery procedures for the intermediate relay UE to find a parent relay UE first and then for the remote UEs to find the first relay UE in multi-hop scenario.

Proposal 3: The intermediate relay UE performs discovery procedure as a relay UE after establishing the PC5 connection with its parent relay UE. In this case it does not need to check the AS condition.

[R2-2409967](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409967%20Discussion%20on%20relay%20discovery%20and%20selection.docx) Relay discovery and selection for Multi-hop UE-to-NW Relay Apple discussion Rel-19 DUMMY

Proposal 1 An in-coverage relay UE shall always determine whether it can be the “Last relay UE” first and may become intermediate relay UE only if it cannot satisfy the conditions of last relay UE.

Proposal 3 Only mode 2 RA is supported for remote UE and intermediate relay UE.

[R2-2409632](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409632_Discussion%20on%20topology%20and%20intermediate%20relay%20UE%20(re)selection.docx) Discussion on topology and intermediate relay UE (re)selection vivo discussion Rel-19

[R2-2409728](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409728%20Discussion%20on%20multi-hop%20U2N%20relay%20discovery%20and%20relay%20selection.docx) Discussion on multi-hop U2N relay discovery and relay selection NEC Corporation discussion NR\_SL\_relay\_multihop-Core

[R2-2409730](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409730%20-%20Discovery%20and%20relay%20(re)selection%20for%20multi-hop%20U2N%20relay.docx) Discovery and relay (re)selection for multi-hop U2N relay OPPO discussion Rel-19 NR\_SL\_relay\_multihop-Core

[R2-2409859](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409859%20Discussion%20on%20Multi-hop%20Discovery%20and%20(Re)selection.docx) Discussion on Multi-hop Discovery and (Re)selection CATT discussion Rel-19 NR\_SL\_relay\_multihop-Core

[R2-2409906](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409906_Discussion%20on%20relay%20discovery%20and%20(re)selection%20for%20NR%20sidelink%20multi-hop%20relay.docx) Discussion on relay discovery and (re)selection for NR sidelink multi-hop relay TOYOTA InfoTechnology Center discussion Rel-19 NR\_SL\_relay\_multihop-Core

[R2-2410007](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410007%20(R19%20SL%20Relay%20WI_AI8132%20RelayDiscoverySelection).doc) Discovery and Relay (Re)Selection for Multi-hop U2N Relays InterDigital discussion Rel-19

[R2-2410104](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410104_Multi-hop%20relay%20discovery%20and%20reselection.docx) Multi-hop relay discovery and reselection China Telecom discussion Rel-19 DUMMY

[R2-2410150](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410150%20-%20discussion%20on%20discovery%20and%20relay%20(re)selection.docx) discussion on discovery and relay (re)selection Ericsson discussion Rel-19

[R2-2410183](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410183%20Remaining%20issues%20on%20multi-hop%20U2N%20Relay%20Discovery%20message%20forwarding.docx) Remaining issues on multi-hop U2N Relay Discovery message forwarding ASUSTeK discussion Rel-19 NR\_SL\_relay\_multihop

[R2-2410281](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410281%20Relay%20(re)selection%20in%20Multi-hop%20relay%20v1.0.doc) Relay (re)selection in Multi-hop relay Lenovo discussion Rel-19

[R2-2410288](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410288%20Relay%20discovery%20aspects.docx) Relay discovery aspects for multi-hop relay Nokia discussion NR\_SL\_relay\_multihop

[R2-2410298](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410298-Discussion%20on%20the%20discovery%20and%20relay%20(re)selection%20for%20multi-hop%20U2N%20relay.docx) Discussion on the discovery and relay (re)selection for multi-hop U2N relay LG Electronics Inc. discussion Rel-19

[R2-2410392](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410392.docx) Multi-hop relay selection/re-selection Sony discussion Rel-19 NR\_SL\_relay\_multihop-Core

[R2-2410570](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410570_relay_discovery_reselection.docx) Discovery and (re)selection under multihop relay Kyocera discussion

[R2-2410619](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410619_%20SL%20selection.docx) Relay discovery and (re)selection TCL discussion Rel-19

[R2-2410840](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410840%20AIoT%20paging.docx) Relay discovery and (re)selection TCL discussion Rel-19

[R2-2410704](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410704-MH-reselection.docx) discussion on Relay discovery and (re)selection for multi-hop relay Sharp discussion Rel-19 NR\_SL\_relay\_multihop-Core

[R2-2410734](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410734-Discovery%20and%20Relay%20(re)selection%20for%20multi-hop%20U2N%20relay.docx) Discovery and Relay (re)selection for multi-hop U2N relay Qualcomm Incorporated discussion NR\_SL\_relay\_multihop-Core

### 8.13.3 Control Plane Procedures and SRAP impact

Contributions should focus on control plane procedures and can include SRAP impact and QoS handling to support additional hops.

Email discussion summary

[R2-2410006](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410006%20Report%20of%20%5bPOST127%5d%5b402%5d%5bRelay%5d%20MultliHop%20Relay%20CP_P2_v21_Rapp.docx) Report of [Post127][402][Relay] Multi-hop relay control plane InterDigital discussion Rel-19

[Connection establishment, two approaches, edited by chair for clarity]

Proposal 1 – In one approach (“approach 1”) of U2N relays, each of the Intermediate Relay UEs must be in RRC\_CONNECTED when the U2N remote UE is in RRC\_CONNECTED. Connection establishment in the U2N remote UE first requires that each Intermediate Relay UE which is in RRC\_IDLE/RRC\_INACTIVE first enters RRC\_CONNECTED. FFS whether connection establishment of an Intermediate Relay UE (other than the Last Relay UE) is captured in specification as connection establishment of a remote UE or a relay UE.

Proposal 2 – The figure and description under P1 of R2-2410006 serves as a baseline connection establishment procedure for multi-hop U2N Relays if Approach 1 (all relay UEs must be in RRC\_CONNECTED when the remote UE is in RRC\_CONNECTED) is adopted.

Discussion:

OPPO think P2 could say “for discussion”.

Kyocera think P1 implies more delay than may be necessary for multiple connection setups.

Samsung think we might not mandate staying connected after initial access. InterDigital think this is different from what was proposed in the email discussion.

Proposal 3 – In one approach (“approach 2”) of U2N relays, Intermediate Relay UEs (other than the Last Relay UE) can be in RRC\_IDLE/RRC\_INACTIVE when the U2N remote UE is in RRC\_CONNECTED.

Proposal 4 – In approach 2, any relay UE which happens to be in RRC\_CONNECTED can obtain its relaying RLC channel configuration in dedicated signalling.

Proposal 5 – The figure and description under P4 of R2-2410006 serves as a baseline connection establishment procedure for multi-hop U2N Relays if Approach 2 (relays other than the Last Relay may/may not remain in RRC\_IDLE/RRC\_INACTIVE when the remote UE is in RRC\_CONNECTED) is adopted.

Discussion:

OPPO think the RRC\_CONNECTED case can be added in P3.

LG wonder how P4 works; how does the dedicated signalling get to the intermediate relay UE? InterDigital understand that being in RRC\_CONNECTED means it can communicate with the network.

LG think in the RRC\_CONNECTED case, there is no difference between approaches 1 and 2. Qualcomm understand that there may be an intermediate UE in between with its own serving cell (not in RRC\_CONNECTED).

Huawei wonder how the intermediate relay UE that is not in RRC\_CONNECTED state can be authorised. InterDigital indicate that this was discussed by email, and the understanding is that the authorisation comes from upper layers while the UE is connected, and then it can transit to idle/inactive. Huawei think the RAN needs to know if the relay UE is authorised.

Apple understand that P4 assumes the relay UE also acts as a remote UE.

Agreements:

In one approach (“approach 1”) of U2N relays, each of the Intermediate Relay UEs must be in RRC\_CONNECTED when the U2N remote UE is in RRC\_CONNECTED. Connection establishment in the U2N remote UE first requires that each Intermediate Relay UE which is in RRC\_IDLE/RRC\_INACTIVE first enters RRC\_CONNECTED. FFS whether connection establishment of an Intermediate Relay UE (other than the Last Relay UE) is captured in specification as connection establishment of a remote UE or a relay UE. FFS if SRB0 would be forwarded before connection establishment of each intermediate relay UE.

The figure and description under P1 of R2-2410006 serves as a baseline connection establishment procedure for discussion for multi-hop U2N Relays if Approach 1 (all relay UEs must be in RRC\_CONNECTED when the remote UE is in RRC\_CONNECTED) is adopted.

In one approach (“approach 2”) of U2N relays, Intermediate Relay UEs (other than the Last Relay UE) can be in any RRC state when the U2N remote UE is in RRC\_CONNECTED.

In approach 2, any intermediate relay UE which happens to be in RRC\_CONNECTED towards the last relay UE’s serving gNB and is operating as a remote UE is assumed to obtain its relaying configuration (RLC channel configuration, SRAP configuration, etc.) in dedicated signalling from the last relay UE’s serving gNB via the U2N connection.

The figure and description under P4 of R2-2410006 serves as a baseline connection establishment procedure for discussion for multi-hop U2N Relays if Approach 2 (relays other than the Last Relay may/may not remain in RRC\_IDLE/RRC\_INACTIVE when the remote UE is in RRC\_CONNECTED) is adopted.

Proposal 7 – The scenario of the remote UE RRC\_CONNECTED to one cell while an Intermediate Relay UE is RRC\_CONNECTED to a different cell is supported only in approach 2. FFS whether the scenario needs to be supported.

Proposal 8 – For approach 1, QoS split for each hop is performed by the network.

Proposal 9 – For approach 2, QoS split between the Uu hop and all remaining hops is performed by the network. FFS how to split the QoS over each of the individual remaining hops.

Discussion:

Samsung understand that P8 refers to the baseline procedure.

Qualcomm understand that there is no per-hop QoS split as such. They see it as just gNB implementation behaviour. OPPO think “QoS split” is what we used in Rel-17 and makes sense. ZTE also think “QoS split” is correct, and something like “QoS management” would be a much larger scope.

AT&T think we should not say that the network is “managing” QoS since it is not performing direct procedures on the UEs; the UE has to manage however the QoS is allocated.

Samsung think it is the gNB’s task to ensure the e2e QoS, and if there is concern about the term “QoS split”, we could say “the gNB guarantees the e2e QoS”.

Xiaomi think there may be assistance information from the UE side, so it is not purely gNB implementation.

Agreements:

For the baseline procedure, the PDB for each hop is provided by the network according to gNB implementation. This does not preclude the possibility of assistance information from the UE(s).

If enhancements allow some intermediate relay UEs to remain in idle/inactive, the PDB split between the Uu hop and all remaining hops is performed by the network. FFS how to split the PDB over each of the individual remaining hops.

[System information]

Proposal 6 – In multi-hop, the U2N Remote UE uses the SI of the cell of the Last Relay UE, which is forwarded via the Intermediate Relay UE(s). FFS on how to perform the forwarding.

Discussion:

ZTE wonder if it implies anything about how to use the SI.

Lenovo wonder if the intermediate relay UEs could receive the SI directly when in coverage, vs. receiving it from the last relay UE.

Qualcomm think the intermediate relay UEs in RRC\_CONNECTED could acquire the SI on demand directly. ZTE wonder if the intermediate relay UE would have to store the SI. Qualcomm are thinking of the case where the intermediate relay UE already has it.

Agreement:

In multi-hop, the U2N Remote UE acquires the SI of the cell of the Last Relay UE, which is forwarded via the Intermediate Relay UE(s). FFS how to perform the forwarding and whether an intermediate relay UE can forward available SI directly (rather than retrieving it from the last relay UE).

[Use case and scenario support]

Proposal 10: The scenario of two remote UEs connected to different cells via a single relay is supported only by approach 2. RAN2 discusses if this is a valid use case to support in this release or future releases.

Proposal 11: If the scenario of the relay and remote UE connected to different cells is supported, service continuity for this scenario is outside of Rel19 scope.

[Additional details]

Proposal 12: Local UE ID of the remote UE is provided by the gNB. FFS for approach 2, how it is provided to relay UEs in RRC\_IDLE/RRC\_INACTIVE and which cell/gNB provides it.

Proposal 13: RAN2 discuss, in approach 2, whether RLC channel configuration is provided by the gNB or is obtained by SIB/Preconfiguration.

[Pros and cons of approaches]

Proposal 14: Approach 1 adds signalling and latency associated with connection (re)establishment of the relay UEs. RAN2 discuss whether this is a concern.

Proposal 15: Approach 1 makes connection establishment at the remote UE dependant on successful connection establishment by each relay. RAN2 discuss whether this is a concern.

Proposal 16: RAN2 discusses which approach has a higher signalling overhead.

Report of unofficial offline

[R2-2411128](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Inbox\R2-2411128.zip) Way forward on SL multi-hop relay LG Electronics Inc. discussion Rel-19

Proposal:

Design baseline procedure based on the case in which all intermediate relay UEs for a remote UE are/become in RRC\_CONNECTED.

1. Support this case based on existing U2N framework

2. Continue to discuss whether/how to support the case that intermediate relay UEs are not in RRC\_CONNECTED.

3. Other solutions for optimization are not precluded e.g. in terms of signaling and latency

4. Support of other cases are not precluded

Discussion:

Apple have some concerns about the wording as related to e2e connection setup. They understand the baseline procedure should be based on the existing U2N framework, and each intermediate relay UE should initiate connection setup after receiving a trigger from the remote UE.

Qualcomm would like to say “for the cases” rather than “based on the cases”.

Samsung think the spirit of the proposal is that first we should set up the baseline, and this is easier to do with approach 1; after we have this baseline, we can look at whether there is some optimisation space to reduce latency/overhead.

InterDigital are OK with bullet 1 but would like to change the wording of bullet 2. They do not agree with bullet 3 because of the shortage of TUs.

Nokia also think we should remove bullet 3.

Qualcomm are concerned that the approach 2 procedure could be quite different from approach 1.

AT&T note that we have to accommodate the case with all UEs in RRC\_CONNECTED. Nokia think both approaches cover this case and we cannot decide one approach based on this common case.

Samsung think we can focus on the baseline procedure design, or we can do some enhancements on top of it, and after another meeting or two we can evaluate our progress.

Agreement:

Support a baseline procedure for the case in which the intermediate relay UEs for a remote UE all transition to RRC\_CONNECTED (if not already there) when the remote UE goes to RRC\_CONNECTED.

1. Support this case based on existing U2N framework, with all the UEs RRC\_CONNECTED to the last relay UE’s serving cell.

2. Continue to discuss whether/how to support the case that intermediate relay UEs do not all move to RRC\_CONNECTED when the remote UE triggers connection establishment.

All agreements in this WI apply to both these cases unless otherwise specified.

* [Post128][401][Relay] Control plane baseline solution (InterDigital)

Scope: Develop the baseline control plane procedures for connection establishment, and paging/system information forwarding, towards a stage 3 development stage.

Intended outcome: Report to RAN2#129

Deadline: Long

Other contributions

Approach 1

[R2-2410139](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410139%20Discussion%20on%20control%20plane%20and%20QoS%20handling%20for%20NR%20sidelink%20multi-hop%20relay.docx) Discussion on control plane and QoS handling for NR sidelink multi-hop relay Spreadtrum, UNISOC discussion Rel-19

Proposal 1: Support multi-hop U2N relay Approach 1 which the NW needs to directly control each of intermediate relay UEs via Uu RRC signalling and all relay UEs must be in RRC\_CONNECTED when the remote UE is in RRC\_CONNECTED.

Proposal 2: The connection establishment procedure of single-hop U2N relays can be as a baseline for multi-hop U2N relays if Approach 1 is adopted.

Proposal 3: For remote UE end-to-end QoS split in multi-hop L2 U2N relay, the mechanism in single-hop L2 U2N relay is as baseline, i.e. gNB implementation can handle the end-to-end QoS split over multi-hop.

Approach 2

[R2-2410149](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410149%20-%20discussion%20on%20control%20plane%20procedure.docx) discussion on control plane procedure Ericsson discussion Rel-19

Proposal 1 RAN2 to work on two scenarios including:

a. Scenario 1: Intermediate Relay UE(s) and Last Relay UE are in the same serving cell.

b. Scenario 2: Relay UEs can be in different serving cells of the same gNB.

Proposal 4 Same as in legacy, when L2 U2N Remote UE is in RRC\_CONNECTED, L2 U2N Last Relay UE also needs to be in RRC\_CONNECTED.

Proposal 5 To down-select Approach 2 between Approach 1 and Approach 2, i.e., L2 U2N Intermediate Relay UEs are not mandated to be in RRC\_CONNECTED.

SRAP aspects

[R2-2410290](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410290%20SRAP%20impacts%20of%20MH%20relay.docx) SRAP impacts on MH relay Nokia discussion NR\_SL\_relay\_multihop

Proposal 2: An SRAP header can be added per hop to map ingress and egress RLC channels.

Discussion:

Nokia clarify that they think it is also possible to have this solution with a single SRAP header.

Apple understand the SRAP header maps e2e bearer to egress PC5 RLC channel, and we should keep this principle. They think the exact management of the header is more of a stage 3 detail.

Samsung think the baseline is that we use the information in the SRAP header for the mapping, so maybe it’s better not to add multiple headers.

Apple understand that there is no per-hop information in the SRAP header.

Nokia are not sure that their proposal requires multiple SRAP entities. From one relay UE’s perspective, it only needs to look at the next hop.

LG think only one SRAP header is needed; the local ID can indicate the remote UE ID.

Ericsson wonder if we are going to reuse the Rel-17 SRAP header format. They wonder if this works if the same relay serves both a Rel-17 remote UE and a Rel-19 remote UE and needs to determine which is the next hop.

Nokia think if we do not reuse the Rel-17 header, we cannot reuse a Rel-17 UE as the last relay UE. Chair thinks this would mean two SRAP entities at the intermediate relay UE.

OPPO are not sure if Nokia’s case is valid; they understand from SA2 colleagues that Rel-17 and Rel-19 relaying will use different RSCs.

LG understand that the header only needs one UE ID even for multihop.

[R2-2409969](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409969%20Discussion%20on%20SRAP.docx) Discussion on SRAP for Multi-hop Layer-2 U2N Relay Apple discussion Rel-19 DUMMY

Proposal 1 Each Layer-2 Intermediate Relay UE has a single PC5 SRAP entity.

Proposal 2 Remote UE ID and BEARER ID are included in SRAP header for multi-hop L2 U2N relay.

Proposal 3 For SRAP mapping in intermediate relay, a single set of PC5 Relay RLC channel configurations is used for both directions, whereas different SRAP mapping could be used in each direction.

Proposal 4 A “direction” bit to discern UL/DL is included in SRAP header.

Proposal 5 Support SRAP Control PDU including remote UE L2 ID to be transported together with the first RRC message .

Agreements:

Maintain the principle that the SRAP header enables mapping from the e2e bearer ID to the egress PC5 RLC channel. This does not preclude changes/rewrites/addition of the SRAP header by the intermediate UEs.

Remote UE ID and BEARER ID are included in Rel-19 SRAP header for multi-hop L2 U2N relay.

Bearer mapping

[R2-2410033](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410033_Discussion%20on%20control%20plane%20procedures%20for%20multi-hop%20SL%20Relay.doc) Discussion on control plane procedures for multi-hop SL relay ZTE Corporation, Sanechips discussion Rel-19 NR\_SL\_relay\_multihop-Core

Proposal 9: For the bearer mapping configured to intermediate relays, it is the mapping of remote UE’s RB to egress PC5 RLC channel.

Proposal 10: RAN2 to discuss how intermediate relays to determine the egress link in the downlink.

[Alternatives from text of paper related to P10:]

- Way 1: the gNB indicates the downlink routing information of each remote UE to the intermediate relay, i.e. the next node in the downstream lead to the remote UE.

- Way 2: the intermediate relay records from which node the remote UE’s packets are received in the uplink. Then the intermediate relay forwards the remote UE’s packets to the same node in the downlink.

QoS split

[R2-2409860](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409860%20Discussion%20on%20the%20control%20plane%20procedures.docx) Discussion on the Control Plane Procedures CATT discussion Rel-19 NR\_SL\_relay\_multihop-Core

Proposal 9: The network is responsible for the QoS split for each hop.

Proposal 10: Same as Rel-17 L2 U2N relay, the parameter needs to be split is PDB.

Paging/SI

[R2-2409796](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409796%20CP%20and%20SRAP%20for%20Multi-hop%20Relay.docx) CP and SRAP for Multi-hop Relay NEC discussion

Proposal 6: For paging and SI forwarding, the similar principles of Rel-17 U2N relay mechanism can apply to multi-hop case.

Proposal 7: For paging and SI forwarding, there are multiple PC5-RRC connections along with the multi-hop path (i.e., among the remote UE and multiple intermediate U2N relay UEs).

Discussion:

Apple think P6 is not sufficiently clear on what the “principle” is. ZTE have the same concern and think the proposal is too general.

[R2-2409633](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409633_Discussion%20on%20CP%20and%20SRAP%20impact%20for%20Approach%201.docx) Discussion on CP and SRAP impact for Approach 1 vivo discussion Rel-19

[R2-2409732](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409732%20-%20Control%20plane%20procedures%20of%20multi-hop%20U2N%20relay.docx) Control plane procedures of multi-hop U2N relay OPPO discussion Rel-19 NR\_SL\_relay\_multihop-Core

[R2-2409968](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409968%20Discussion%20on%20CP%20connection%20set-up%20approaches_v1.docx) Discussion on End-to-End Connection Setup Approaches for Multi-hop UE-to-NW Relay Apple discussion Rel-19 DUMMY

[R2-2410008](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410008%20(R19%20SL%20Relay%20WI_AI8.13.3%20CP%20Handling).doc) Control Plane Aspects for Multi-hop U2N Relays InterDigital discussion Rel-19

[R2-2410105](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410105%20Discussion%20on%20control%20plane%20aspects%20for%20NR%20sidelink%20multi-hop%20relay.docx) Discussion on control plane aspects for NR sidelink multi-hop relay China Telecom discussion Rel-19 DUMMY

[R2-2410184](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410184%20Remaining%20issues%20on%20SRB0%20message%20forwarding%20in%20multi-hop%20U2N%20Relay.docx) Remaining issues on SRB0 message forwarding in multi-hop U2N Relay ASUSTeK discussion Rel-19 NR\_SL\_relay\_multihop

[R2-2410282](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410282%20Control%20plane%20in%20Multi-hop%20relay%20v1.0.doc) Control plane in Multi-hop relay Lenovo discussion Rel-19

[R2-2410297](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410297-Discussion%20on%20the%20control%20plane%20procedure%20for%20multi-hop%20U2N%20relay.docx) Discussion on the control plane procedure for multi-hop U2N relay LG Electronics Inc. discussion Rel-19

[R2-2410569](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410569_relay_CP.docx) Control Plane under multihop L2 U2N relaying Kyocera discussion

[R2-2410588](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410588%20Control%20Plane%20Procedures%20for%20Multi%20Hop%20Relays.docx) Control plane procedures for multi-hop relay Huawei, HiSilicon discussion Rel-19 NR\_SL\_relay\_multihop-Core

[R2-2410631](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410631%20On%20approach%201.docx) On approach 1 Nokia discussion NR\_SL\_relay\_multihop-Core

[R2-2410705](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410705-MH-Cplane.docx) discussion on C-plane procedure for multi-hop relay Sharp discussion Rel-19 NR\_SL\_relay\_multihop-Core

[R2-2410735](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410735-Control%20procedure%20for%20multi-hop%20L2%20based%20U2N%20relay.docx) Control procedure for multi-hop L2 based U2N relay Qualcomm Incorporated discussion NR\_SL\_relay\_multihop-Core

[R2-2410756](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410756_CP_v2.docx) Consideration on CP and UP issues for multi-hop SL relay Samsung discussion Rel-19 NR\_SL\_relay\_multihop-Core

### 8.13.4 Service continuity

First priority scenarios: (A) intra-gNB multi-hop indirect to direct path switch, (B) intra-gNB multi-hop indirect to single-hop indirect path switch. Second priority scenarios: (C) intra-gNB direct to multi-hop indirect path switch, (D) intra-gNB single-hop indirect to multi-hop indirect path switch.

[R2-2410736](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410736-service%20continuity.docx) Consideration on multi-hop U2N relay service continuity Qualcomm Incorporated discussion NR\_SL\_relay\_multihop-Core

Proposal 2 For scenario B, RAN2 supports the case that the target U2N relay UE is a new relay UE which is not on the source relay path, and existing Rel-17 indirect path to indirect path switching can be reused.

Proposal 3 For scenario B, RAN2 does not support the case that that the target U2N relay UE is an intermediate relay UE which is on the source relay path.

Proposal 4 For scenario B, RAN2 supports the case that last relay UE is unchanged, the solution should be postponed until the control plane solution is determined.

Discussion:

CATT think P2 should say Rel-18.

OPPO understand there is no e2e PC5 connection between the remote UE and the last relay UE, so we do not need specific enhancements for this case.

Kyocera think there are cases where the remote UE can only see an intermediate relay UE that is on the path, so they have concerns about P3. They wonder if we really need to prevent this group handover-like case.

Samsung think P3 is not meaningful because the target path would not be single-hop.

vivo think P3 is possible if the intermediate relay UE can also serve as a last relay UE.

Qualcomm explain that P3 is directed to the role change case, where the intermediate relay UE switches to a direct connection to the network.

Samsung think we do not need to consider the case of simultaneous path switches at the remote UE and the intermediate relay UE.

Ericsson think it would be difficult for the network to trigger the case in P3.

OPPO think there should be no UE impact from these decisions.

LG support the second agreement (last relay UE unchanged), but think it is too soon to say there is no UE impact.

Agreements:

For scenario B, RAN2 supports the case that the target U2N relay UE is a new relay UE which is not on the source relay path, and existing Rel-18 indirect path to indirect path switching can be reused.

For scenario B, RAN2 will support the case that the target single-hop relay UE is the last relay UE on the source path using the existing Rel-18 i2i path switching. Spec impact will be minimised.

For scenario B, RAN2 does not specify anything to support the case that that the target U2N relay UE is an intermediate relay UE which is on the source relay path using a single procedure. This case can be handled in the baseline control plane model, if necessary and subject to network implementation, by sequential path switches for the remote UE and the target intermediate relay UE.

[R2-2409731](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409731%20-%20Service%20continuity%20of%20multi-hop%20U2N%20relay.docx) Service continuity of multi-hop U2N relay OPPO discussion Rel-19 NR\_SL\_relay\_multihop-Core

[Scenario A]

Proposal 1 RAN2 to confirm that the intra-gNB switching from indirect to direct path procedure defined in TS 38.300 for single hop case can be used as the baseline for multi-hop indirect to direct path switching.

Proposal 2 RAN2 to discuss event X1 /X2 can be reused in multi-hop indirect to direct path switching with the understanding that the “first relay UE” in multi-hop relay link is “serving L2 U2N Relay UE” to be reported.

[Scenario B]

Proposal 3 RAN2 to confirm the intra-gNB switching from indirect path to indirect path procedure defined in TS 38.300 in single hop case can be used as baseline for multi-hop indirect to single hop indirect path switching procedure.

[Chair’s note: “multi-hop indirect to direct” in P4 seems to be a typo for “multi-hop indirect to single-hop indirect”, i.e., scenario B]

Proposal 4 RAN2 to discuss the following measurement event can be reused in multi-hop indirect to direct path switching:

- Event Y2

- Event Z1 with the understanding that the “first relay UE” in multi-hop relay link is “serving L2 U2N Relay UE” to be reported.

Discussion:

Qualcomm think there might be a difference between the control plane approaches, because the intermediate relay UE may not be visible to the gNB. LG are not sure why this makes a difference, because the intermediate relay UEs will be triggered to enter connected mode for the procedure. Huawei agree with LG.

Qualcomm think the intermediate relay UEs will not need to enter connected mode even during path switch.

Agreements for baseline control plane model:

The intra-gNB switching from indirect to direct path procedure defined in TS 38.300 for single hop case can be used as the baseline for multi-hop indirect to direct path switching.

Event X1 /X2 can be reused in multi-hop indirect to direct path switching with the understanding that the “first relay UE” in multi-hop relay link is “serving L2 U2N Relay UE” to be reported.

The intra-gNB switching from indirect path to indirect path procedure defined in TS 38.300 in single hop case can be used as baseline for multi-hop indirect to single hop indirect path switching procedure.

The following measurement events can be reused in multi-hop indirect to single-hop indirect path switching:

- Event Y2

- Event Z1 with the understanding that the “first relay UE” in multi-hop relay link is “serving L2 U2N Relay UE” to be reported.

[R2-2410589](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410589%20Discussion%20on%20service%20continuity%20for%20multi-hop%20relays.docx) Discussion on service continuity for Multi-hop Relay Huawei, HiSilicon discussion Rel-19 NR\_SL\_relay\_multihop-Core

[Figures in proposals refer to R2-2410589]

Proposal 2: Agree the above procedure in Figure 1 as a baseline for intra-gNB multi-hop indirect to direct path switching procedure to be captured in TS 38.300.

Proposal 4: Agree the above procedure in Figure 2 as a baseline for intra-gNB multi-hop indirect to single-hop indirect path switching to be captured in TS 38.300.

Discussion:

Samsung want to clarify if it means we can reuse the existing flow to derive the stage 2 procedures. Huawei think it would be difficult to reuse the existing clause and we would probably create a new one.

Agreements:

Figure 1 of R2-2410589 can be used as a baseline for intra-gNB multi-hop indirect to direct path switching procedure to be captured in TS 38.300.

Figure 2 of R2-2410589 can be used as a baseline for intra-gNB multi-hop indirect to single-hop indirect path switching to be captured in TS 38.300.

[R2-2410034](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410034%20Discussion%20on%20service%20continuity%20for%20multi-hop%20relay.doc) Discussion on service continuity for multi-hop SL relay ZTE Corporation, Sanechips discussion Rel-19 NR\_SL\_relay\_multihop-Core

Proposal 3: When an intermediate relay detects PC5 link quality of an intermediate hop becoming worse, it should notify the downstream intermediate relays/remote UEs.

Proposal 4: Introduce a new measurement report event for multi-hop indirect path switching:

- Event X3: Upon receiving a notification that an intermediate hop becomes worse than threshold.

Discussion:

NEC think P3 can only work when the intermediate relay is in RRC\_IDLE/RRC\_INACTIVE; otherwise it will be directly reported to the network. They also think the intermediate relay UE can report its Uu link quality towards the remote UE. ZTE think it also works in RRC\_CONNECTED, because if only the intermediate relay UE reports link quality to the network, the network does not have enough information and also needs the measurements from the remote UE to determine what the target should be.

InterDigital agree with ZTE, and they think the main problem is that the network could receive separate events at different times; the intention is to coordinate the events so that they make sense at the network.

Lenovo think RLF at the intermediate relay UE will already result in a notification message, and the remote UE will perform re-establishment. They wonder what the remote UE would do.

ZTE intended that the mechanism would be used before RLF to preserve QoS rather than wait for RLF.

Huawei think this is an enhancement that can be looked at in a later phase.

Samsung think the whole thing should be under network control, so informing the remote UE is an optimisation.

OPPO agree with Huawei and Samsung; they see that there are existing mechanisms to reduce latency and this is an optimisation.

LG also think it can go through the network.

CATT also see it as an optimisation with no strong motivation.

Proposal 7: For the measurements of the serving multi-hop indirect path in the measurement report, it may include at least the first intermediate relay UE ID and the PC5 link quality with the first intermediate relay. FFS the PC5 link quality status of intermediate hops.

Discussion:

OPPO note that the legacy measurement report also includes the cell ID.

Qualcomm wonder if the UE should report the source or only the target. ZTE think this is just about the contents of the measurement report.

Qualcomm think the gNB should already know the serving intermediate relay.

[R2-2409634](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409634_Discussion%20on%20Service%20continuity%20for%20multi-hop%20relay.docx) Discussion on Service continuity for multi-hop relay vivo discussion Rel-19

[R2-2409861](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409861%20Intra-gNB%20Service%20Continuity%20for%20Multi-hop%20U2N%20Relay.docx) Intra-gNB Service Continuity for Multi-hop U2N Relay CATT discussion Rel-19 NR\_SL\_relay\_multihop-Core

[R2-2410106](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410106%20Discussion%20on%20service%20continuity%20for%20multi-hop%20relay.docx) Discussion on service continuity for multi-hop relay China Telecom discussion Rel-19 DUMMY

[R2-2410185](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410185%20Discussion%20on%20measurement%20report%20for%20multi-hop%20U2N%20Relay.docx) Discussion on measurement report for multi-hop U2N Relay ASUSTeK discussion Rel-19 NR\_SL\_relay\_multihop

[R2-2410201](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410201_Service%20Continuity%20for%20Multihop%20Relays.docx) Service Continuity for Multi-Hop Relays Ericsson discussion Rel-19

[R2-2410283](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410283%20Service%20continuity%20in%20Multi-hop%20relay%20v1.0.doc) Service continuity for Multi-hop system Lenovo discussion Rel-19

[R2-2410299](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410299-Discussion%20on%20service%20continuity%20for%20multi-hop%20U2N%20relay.docx) Discussion on service continuity for multi-hop U2N relay LG Electronics Inc. discussion Rel-19

[R2-2410354](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410354_Considerations%20on%20Service%20Continuity%20of%20Multi-hop%20Relay.docx) Considerations on Service Continuity of Multi-hop Relay NEC discussion Rel-19

[R2-2410706](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410706-MH-ServiceContinuity.docx) discussion on service continuity for multi-hop relay Sharp discussion Rel-19 NR\_SL\_relay\_multihop-Core

[R2-2410828](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410828_ServCont.docx) Initial considerations on service continuity Samsung discussion Rel-19 NR\_SL\_relay\_multihop-Core

## 8.15 NavIC L1 SPS A-GNSS support

(LCS\_NAVIC\_L1\_SPS\_NR\_LTE-Core; leading WG: RAN2; REL-19; WID [RP-242414](https://www.3gpp.org/ftp/meetings_3gpp_sync/ran/docs/RP-241264.zip))

Time budget: 0.5 TU

Tdoc Limitation: 1 tdoc

[R2-2409723](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409723-Discussion%20on%20Introduction%20of%20NavIC%20L1%20SPS%20support%20to%20A-GNSS%20positioning.docx) Discussion on Introduction of NavIC L1 SPS support to A-GNSS positioning Reliance Jio, CEWiT discussion Rel-19 LCS\_NAVIC\_L1\_SPS\_NR\_LTE-Core

[R2-2410243](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410243%20A-GNSS%20support%20for%20NavIC%20L1%20SPS.docx) A-GNSS support for NavIC L1 SPS NEC discussion Rel-19 LCS\_NAVIC\_L1\_SPS\_NR\_LTE-Core

Proposal 1: The new Klobuchar Model parameter IE and NeQuick-N Model parameter IE is introduced for ionospheric model.

Proposal 2: For GNSS-navigationModel IE, the following information is introduced to support NavIC L1 band SPS:

- the NavIC L1 health indication should be introduced

- the iod of NavIC L1 SPS is indicated by 11 bits of toec (seconds, scale factor 300) in reference [2]

- a new NavIC clock Model is introduced

- a new NavIC orbit Model is introduced

Proposal 3: For almanac model, extend the value of some parameters/fields in AlmanacNavIC-AlmanacSet IE, e.g., navic-AlmE, navic-AlmOMEGADOT, navic-Almf0, to support the NavIC L1 band SPS.

Proposal 4: Reuse the UTC-ModelSet2 for NavIC L1 band SPS.

Proposal 5: For NavIC L1 band SPS, the transmission timing of the navigation message provided by the ITOWC and TOIC corresponding to the given set of grid ionospheric parameters. The range of the ITOWC is from 0 to 83 and the range of TOIC is from 0 to 399.

Discussion:

CEWiT indicate that the CR extends the Klobuchar model rather than introducing a new one, introduces a new almanac model rather than extending fields.

Reliance Jio indicate that the extensions from P5 are in the CR.

[R2-2409724](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409724-Introduction%20of%20NavIC%20L1%20SPS%20A-GNSS%20in%20LTE%20Stage%202%20specification.docx) Introduction of NavIC L1 SPS A-GNSS in LTE Stage 2 specification Reliance Jio, CEWiT, Ericsson, Huawei CR Rel-19 36.305 18.0.0 0120 - B LCS\_NAVIC\_L1\_SPS\_NR\_LTE-Core

* Agreed in principle

[R2-2409725](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409725-Introduction%20of%20NavIC%20L1%20SPS%20A-GNSS%20in%20NR%20Stage%202%20specification.docx) Introduction of NavIC L1 SPS A-GNSS in NR Stage 2 specification Reliance Jio, CEWiT, Ericsson, Huawei CR Rel-19 38.305 18.3.0 0179 - B LCS\_NAVIC\_L1\_SPS\_NR\_LTE-Core

* Agreed in principle

[R2-2409726](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409726-Introduction%20of%20NavIC%20L1%20A-GNSS%20in%20LPP.docx) Introduction of NavIC L1 SPS A-GNSS in LPP Reliance Jio, ISRO, CEWiT, MediaTek, Ericsson CR Rel-19 37.355 18.3.0 0532 - B LCS\_NAVIC\_L1\_SPS\_NR\_LTE-Core

* [Post128][403][POS] NavIC L1 stage 3 CR check (Reliance Jio)

Scope: Check the CR in R2-2409726 and update if necessary.

Intended outcome: Agreeable CR

Deadline: Long

[R2-2409573](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409573%20Introduction%20of%20NavIC%20in%20A-GNSS%20positioning.docx) Introduction of NavIC in A-GNSS positioning ZTE Corporation discussion Rel-19 LCS\_NAVIC\_L1\_SPS\_NR\_LTE-Core

[R2-2410161](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410161%20Discussion%20on%20the%20support%20of%20NavIC%20L1%20SPS.docx) Discussion on the support of NavIC L1 SPS Huawei, HiSilicon discussion Rel-19 LCS\_NAVIC\_L1\_SPS\_NR\_LTE-Core

## 8.16 BDS B2b in A-GNSS

(BDS\_B2b; leading WG: RAN2; REL-19; WID [RP-242413](https://www.3gpp.org/ftp/meetings_3gpp_sync/ran/docs/RP-241264.zip))

Time budget: 0.25 TU

Tdoc Limitation: 1 tdoc

[R2-2410160](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410160%20Discussion%20on%20the%20remaining%20issues%20for%20BDS%20B2b.docx) Discussion on the remaining issues for BDS B2b Huawei, HiSilicon discussion Rel-19 LCS\_BDS\_B2b\_LTE\_NR

Proposal1: For different parameters in the navigation message defined in clause 6 and 7 of ICD, support them by the following:

 Ephemeris parameters: Reuse the existing IE NavModel-BDS-KeplerianSet2 but the field bdsIODE is ignored

 BDT-UTC Time Offset Parameters: reuse the IE UTC-ModelSet2. Clarify in the field description that on the 3 bits from LSB are used. Legacy BDS may also have the same issue.

 Satellite Health Status: reuse the existing IE svHealth. But clarify that bit 1 and bit 2 are used for B2b signal

 No change is needed for all the parameters related to integrity in the nav message.

Discussion:

CATT understand on bullet 2 that the ICD does have 3 bits while LPP has 4 bits, but they do not think it is an issue, because the UE will just interpret the value in the 4 bits; the only possible issue they see is LMF implementation on how to fill the 4 bits. Chair understood the issue was whether the value was in the LSBs or MSBs.

CATT think it is clear the high (first) bit would be 0. Huawei think we should document the difference from the ICD and say the MSB is ignored.

Huawei indicate on bullet 3 that 1 bit is enough for the current spec, but we cannot be sure that there will be no future extension, so it makes more sense to have 2 bits for compatibility. CATT think we do not need to reserve bits in LPP before they are used in the ICD.

Qualcomm tend to agree with CATT that we have not historically copied all the reserved bits into LPP.

Agreements:

In UTC-ModelSet2, clarify in the field description that only the 3 bits from LSB are used.

Do not introduce the reserved bit for svHealth for the B2b signal.

[R2-2409627](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409627%2037.355_(Rel-19).docx) Introduction of B2b signal in BDS system in A-GNSS CATT, CAICT, Ericsson, Huawei, HiSilicon draftCR Rel-19 37.355 18.3.0 B LCS\_BDS\_B2b\_LTE\_NR-Core

Discussion:

Huawei think we could use a post-meeting discussion to check the details.

* [Post128][402][POS] BDS B2b stage 3 CR check (CATT)

Scope: Check and update the CR in R2-2409627.

Intended outcome: Agreeable CR

Deadline: Long

[R2-2410158](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410158%20Introduction%20of%20BDS%20B2b%20in%20A-GNSS%20for%20TS%2036305.docx) Introduction of BDS B2b in A-GNSS for TS 36305 Huawei, HiSilicon, CAICT, CATT, Ericsson CR Rel-19 36.305 18.0.0 0121 - B LCS\_BDS\_B2b\_LTE\_NR

* Agreed in principle

[R2-2410159](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2410159%20Introduction%20of%20BDS%20B2b%20in%20A-GNSS%20for%20TS%2038305.docx) Introduction of BDS B2b in A-GNSS for TS 38305 Huawei, HiSilicon, CAICT, CATT, Ericsson CR Rel-19 38.305 18.3.0 0180 - B LCS\_BDS\_B2b\_LTE\_NR

* Agreed in principle

[R2-2409574](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202411%20-%20RAN2_128,%20Orlando\Extracts\R2-2409574%20Introduction%20of%20BDS%20B2b%20in%20A-GNSS%20positioning.docx) Introduction of BDS B2b in A-GNSS positioning ZTE Corporation discussion Rel-19 LCS\_BDS\_B2b\_LTE\_NR-Core