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

Agenda Item: 10.8

Source: Session Chair (Samsung)

Title: Report from session on LTE V2X and NR SL

Document for: Approval

## General

Please see the following TDocs for e-meeting guidance:

R2-2100000 Agenda for RAN2#113-e Chairman agenda

R2-2100351 3GPP TSG RAN WG2 Handbook (01/2021) ETSI MCC discussion

R2-2100352 RAN2#113-e Meeting Guidelines ETSI MCC discussion

Time Schedule
Please refer to the latest schedule in the RAN2 inbox on the public 3GPP servers.

## List and Status of Offline Email Discussions

* [AT113-e][700][V2X/SL] Organisational (Session Chair)

 **Scope:** Comments to session notes. Kick-off and management of email discussions for V2X/SL session. Coordination issues. Other organizational issues and announcements.

 **Intended outcome:** Approval of Report from V2X/SL session.

 **Deadline:** Feb 05 1100 UTC

* [AT113-e][701][V2X/SL] Miscellaneous corrections (Huawei)

 **Scope:** discuss the need of changes and detailed wordings on the corrections in R2-2100977, R2-2100786, R2-2100210, R2-2100231, R2-2100500, R2-2100502, R2-2101596, R2-2100919, R2-2100230, R2-2101767, R2-2101940, R2-2101655, R2-2100501, R2-2100785, and R2-2100923. Merge the changes and prepare the agreeable CRs. Note for the changes which considered as non-backward compatible, we can prepare a separate CR (e.g. R2-2100230).

 **Intended outcome:** agreeable 38.331 CR in R2-2102171, R2-2102172 (if a separate CR is needed) and 36.331 CR in R2-2102173. Discussion summary in R2-2102174 (if needed).

 **Deadline:** Feb 04 0430 (UTC)

* [AT113-e][702][V2X/SL] T400 expiry in timer table and protection of RRC messages (Vivo)

 **Scope:** discuss the corrections in R2-101761, R2-2100788, R2-2100978, R2-2100790, R2-2100976, and R2-2101760. Normative text may also need to be updated if adds some additional/different UE behaviour at T400 expiry. Merge the changes and prepare the agreeable CR.

 **Intended outcome:** agreeable 38.331 CR in R2-2102175 and discussion summary in R2-2102176 (if needed).

 **Deadline:** Feb 04 0430 (UTC)

* [AT113-e][703][V2X/SL] Discussion on detailed wording for a note (OPPO)

 **Scope:** discuss detailed wordings for a note to clarify inter-frequency operation and prepare the agreeable CR.

 **Intended outcome:** agreeable 38.331 CR in R2-2102177

 **Deadline:** Feb 04 0430 (UTC)

* [AT113-e][704][V2X/SL] Left issue on reset configuration (OPPO)

 **Scope:** discuss if there is real problem with the current specification and what is the best option to solve it (if problem is justified). Prepare the agreeable CR (if needed).

 **Intended outcome:** Agreeable 38.331 CR in R2-2102178 and discussion summary in R2-2102179 (if needed).

 **Deadline:** Feb 04 0430 (UTC)

* [AT113-e][705][V2X/SL] RLC Re-establishment (Vivo)

 **Scope:** Discuss the need of RLC re-establishment. Prepare agreeable CR (if needed).

 **Intended outcome:** Agreeable 38.331 CR in R2-2102180 and discussion summary in R2-2102181 (if needed)

 **Deadline:** Feb 04 0430 (UTC)

* [AT113-e][706][V2X/SL] Response LS to SA2 (LG)

 **Scope:** discuss detailed wordings and prepare the LS to be approved.

 **Intended outcome:** approvable response LS in R2-2102182

 **Deadline:** Feb 02 1245 (UTC)

* [AT113-e][707][V2X/SL] Who will decide SL DRX pattern? (OPPO)

 **Scope:** discuss who (TX UE, RX UE or gNB) will decide SL DRX pattern or configuration in various scenarios (scenario by scenario) considering whether SL DRX is for SL unicast, groupcast or broadcast, TX and RX UEs’ RRC state (including OOC), and whether TX and RX UE’s in the same or different serving cells (including IC and OOC).

 **Intended outcome:** discussion summary and proposals in R2-2102183

 **Deadline:** Feb 02 1245 (UTC)

* [AT113-e][708][V2X/SL] Granularity of SL DRX operation for groupcast/broadcast (Lenovo)

 **Scope:** discuss options identified above (including some level of understanding on how it works, e.g. what information can represent QoS level to differentiate SL DRX operation, how geo-location can work, etc., challenges, pros, and cons for each option) and check companies’ views. Note companies can add additional option if the option proposed in the contribution was missed.

 **Intended outcome:** discussion summary and proposals in R2-2102184

 **Deadline:** Feb 02 1245 (UTC)

## 4.3 V2X and Sidelink corrections Rel-15 and earlier

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

## 6.4 NR V2X

(5G\_V2X\_NRSL-Core; leading WG: RAN1; REL-16; started: Mar 19; target; Aug 20; WID: RP-200129).

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

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

CR rapporteurs will take care of miscellaneous CRs to collect small changes. Please contact / coordinate with CR rapporteur company first for small changes (e.g. non-controversial clarification/correction, editorial correction, etc.).

### 6.4.1 General and Stage-2 corrections

Including incoming LSs, rapporteur inputs, etc.

R2-2100009 LS reply on SL CG handling (R1-2009460; contact: Ericsson) RAN1 LS in Rel-16 5G\_V2X\_NRSL-Core To:RAN2

R2-2100010 LS on R16 V2X Mode-2 agreements to capture in MAC specification (R1-2009474; contact: Intel) RAN1 LS in Rel-16 5G\_V2X\_NRSL-Core To:RAN2

R2-2100011 LS reply on RAN2 agreements and RAN1 related issues (R1-2009475; contact: Intel) RAN1 LS in Rel-16 5G\_V2X\_NRSL-Core To:RAN2

R2-2100024 LS reply on RAN1 agreement on pre-emption (R1-2009661; contact: Intel) RAN1 LS in Rel-16 5G\_V2X\_NRSL-Core To:RAN2

* All LSs above are noted. Issues are discussed in the Email Disc [POST112-e][701][V2X].

R2-2100017 LS on configurable values for sl-DCI-ToSL-Trans (R1-2009577; contact: Ericsson) RAN1 LS in Rel-16 5G\_V2X\_NRSL-Core To:RAN2

[Huawei]: RRC has already captured it.

* Noted.

R2-2100022 Reply LS on UE capability for V2X (R1-2009635; contact: OPPO) RAN1 LS in Rel-16 5G\_V2X\_NRSL-Core To:RAN2 Cc:RAN4

R2-2100023 Reply LS on maximum data rate for NR sidelink (R1-2009643; contact: OPPO) RAN1 LS in Rel-16 5G\_V2X\_NRSL-Core To:RAN2

[OPPO]: UE capability has already captured them.

* Two LSs above are noted.

R2-2100073 Reply to LS C1-206576 on the re-keying procedure for NR SL (S3-203483; contact: LGE) SA3 LS in Rel-16 eV2XARC To:RAN2, CT1

R2-2100012 Reply LS on definition of NR V2X con-current operation (R1-2009491; contact: Huawei) RAN1 LS in Rel-16 5G\_V2X\_NRSL-Core To:RAN4 Cc:RAN2

R2-2100061 LS on SL switching priority (R4-2017839; contact:Xiaomi) RAN4 LS in Rel-16 5G\_V2X\_NRSL-Core To:RAN1 Cc:RAN2

[Session chair]: Do we need to respond to R2-2100061? [Xiaomi]: Question is on switching priority between LTE V2X and NR SL, which is mainly specified in RAN1. So we do not need to respond it. [ZTE]: Question also contains how to derive the priority, which is more RAN2 area. So it will be helpful if we respond it. [Session chair]: Suggest not to respond it right now since there is no requested action to RAN2. And we still can respond after RAN1 response.

* Three LSs above are noted.

R2-2100687 CR for TS 38.300 for NR V2X on miscellaneous issues ZTE Corporation, Sanechips CR Rel-16 38.300 16.4.0 0335 - F 5G\_V2X\_NRSL-Core

* Comeback. Ask companies to provide an input directly to ZTE (if have any).

### 6.4.2 Control plane corrections

This agenda item may utilize a summary document on RRC (Huawei).

R2-2102240 Summary of RRC corrections in AI 6.4.2 Huawei, HiSilicon discussion

Recommendation 1: Agree the Rapporteur’s recommendations in Table 1, and the detailed changes can be further discussed in the offline discussion for Rapporteur’s miscellaneous correction CR(s):

 Agree the changes (at least the intention) proposed as agreeable in Table 1;

 Disagree the changes proposed as not pursued/not needed in Table 1;

 Further discuss the details of the changes proposed as to be further discussed in Table 1.

Recommendation 2: The intention of the CRs in R2-2101767 and R2-2101940 can be agreed. Merge the two CRs and agree the merged CR with necessary revision (i.e. changing remaining “UL” MAC PDU to “SL” MAC PDU in R2-2101767, removing the redundant part in R2-2101940).

Recommendation 4: For the corrections to SL measurement and reporting, the CRs in R2-2101655 and in R2-2100501 can be agreed.

Recommendation 5: RAN2 confirms the intent of the CR in R2-2100785, and further discuss whether the specific change in this CR is agreeable.

* Email discussion on miscellaneous corrections (including the discussion on the need of changes and detailed wordings) in R2-2100790, R2-2100976, R2-2100977, R2-2100786, R2-2100210, R2-2100231, R2-2100500, R2-2100502, R2-2101596, R2-2100919, R2-2100230, R2-2101767, R2-2101940, R2-2101655, R2-2100501, R2-2100785, R2-2100923, and R2-2101760.

Recommendation 3: Do not introduce new signalling in SUI for SL reset configuration as proposed in R2-2100115/R2-2100118.

Recommendation 3a: FFS whether the first two changes in R2-2100115 (corresponding to P1/2 in R2-2100118) are agreeable.

Recommendation 6: Do not introduce RLC entity reestablishment in the case of re-keying (which is a new feature not reaching consensus before).

Recommendation 7: Do not pursue the CRs listed in Table 7.

Recommendation 8: Discuss the Tdocs listed in Table 9 together with other related Tdocs under AI 6.1.1 in the main room.

* Will be discussed in separate based on contributions.
* [AT113-e][701][V2X/SL] Miscellaneous corrections (Huawei)

 **Scope:** discuss the need of changes and detailed wordings on the corrections in R2-2100977, R2-2100786, R2-2100210, R2-2100231, R2-2100500, R2-2100502, R2-2101596, R2-2100919, R2-2100230, R2-2101767, R2-2101940, R2-2101655, R2-2100501, R2-2100785, and R2-2100923. Merge the changes and prepare the agreeable CRs. Note for the changes which considered as non-backward compatible, we can prepare a separate CR (including, e.g. R2-2100230).

 **Intended outcome:** agreeable 38.331 CR in R2-2102171, R2-2102172 (if a separate CR is needed) and 36.331 CR in R2-2102173. Discussion summary in R2-2102174 (if needed).

 **Deadline:** Feb 04 0430 (UTC)

R2-2101761 Miscellaneous corrections on TS 38.331 (Rapportuer CR) Huawei, Hisilicon CR Rel-16 38.331 16.3.1 2437 - F 5G\_V2X\_NRSL-Core

R2-2100788 Correction on T400 expiry behavior vivo CR Rel-16 38.331 16.3.1 2357 - F 5G\_V2X\_NRSL-Core

R2-2100978 Corrections regarding sidelink impacting NR Ericsson CR Rel-16 38.331 16.3.1 2373 - F 5G\_V2X\_NRSL-Core

[Session chair]: CRs have different direction on the same issue (e.g. just correct the corresponding reference section (SL RLF at T400 expiry) in one CR while add some additional/different UE behaviour than SL RLF in others). So first we need to discuss which direction we should go towards. [Ericsson]: All changes are for informative text, so we can handle it as part of miscellaneous corrections. [OPPO]: Whether to consider T400 expiry as SL RLF or SL reconfiguration failure was discussed at RAN2#108. Later although it was agreed it as SL RLF, it was discussed and almost converged as SL reconfiguration failure. We also support to consider it as SL reconfiguration failure. [Intel, MediaTek]: We would like to keep the current UE behaviour, i.e. consider SL RLF at T400 expiry, so prefer just correcting the corresponding reference section in the informative timer table. [Vivo]: According to the proposals from the other side, if the UE does fallback to the prior configuration, it is not aligned with the current RRC because the current RRC specifies the UE needs to release all bearers since it is considered as SL RLF. [Apple, Samsung]: Share the view with Huawei/Ericsson. [Session chair]: UE behaviour in the informative table needs to be aligned with the UE behaviour specified in the formative text and companies need to share common understanding. If we agree with the additional or different UE behaviour, the normative text also needs to be updated accordingly.

R2-2100790 Message protection for NR Sidelink vivo discussion

R2-2100976 Protection of sidelinkUEInformation and ULInformationTrasferIRAT Ericsson CR Rel-16 38.331 16.3.1 2372 - F 5G\_V2X\_NRSL-Core

R2-2101760 Miscellaneous corrections on TS 36.331 (Rapportuer CR) Huawei, Hisilicon CR Rel-16 36.331 16.3.0 4591 - F 5G\_V2X\_NRSL-Core

* [AT113-e][702][V2X/SL] T400 expiry in timer table and protection of RRC messages (Vivo)

 **Scope:** discuss the corrections in R2-101761, R2-2100788, R2-2100978, R2-2100790, R2-2100976, and R2-2101760. Normative text may also need to be updated if adds some additional/different UE behaviour at T400 expiry. Merge the changes and prepare the agreeable CR.

 **Intended outcome:** agreeable 38.331 CR in R2-2102175 and discussion summary in R2-2102176 (if needed).

 **Deadline:** Feb 04 0430 (UTC)

R2-2100977 Protection of sidelinkUEInformation and ULInformationTrasferIRAT Ericsson CR Rel-16 36.331 16.3.0 4558 - F 5G\_V2X\_NRSL-Core

R2-2100786 PC5-RRC connection release requested by upper layers vivo CR Rel-16 38.331 16.3.1 2355 - F 5G\_V2X\_NRSL-Core

R2-2100210 Correction on the Sidelink RRC Recofiguration Procedure CATT CR Rel-16 38.331 16.3.1 2314 - F 5G\_V2X\_NRSL-Core

R2-2100231 Miscellaneous Correction on RRC spec for NR SL communication OPPO CR Rel-16 38.331 16.3.1 2316 - F 5G\_V2X\_NRSL-Core

R2-2100500 Miscellaneous corrections to TS 38.331 ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.1 2328 - F 5G\_V2X\_NRSL-Core

R2-2100502 Editorial corrections in TS 38.331 ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.1 2330 - D 5G\_V2X\_NRSL-Core

R2-2101596 Miscellaneous corrections on 38.331 Xiaomi communications CR Rel-16 38.331 16.3.0 2424 - B 5G\_V2X\_NRSL-Core

R2-2100919 Clarficiations on RRC Parameter sl-ThresPSSCH-RSRP CATT CR Rel-16 38.331 16.3.1 2364 - F 5G\_V2X\_NRSL-Core

R2-2100230 Correction on value range of sl-ConfigIndexCG OPPO CR Rel-16 38.331 16.3.1 2315 - F 5G\_V2X\_NRSL-Core

R2-2101767 CR on LCP restriction parameters for configured SL grant type1 Huawei, HiSilicon CR Rel-16 38.331 16.3.1 2438 - F 5G\_V2X\_NRSL-Core

R2-2101940 Correction on SL LCP restriction of configured grant type 1 ASUSTeK CR Rel-16 38.331 16.3.1 2434 1 F 5G\_V2X\_NRSL-Core R2-2101740

R2-2101655 Correction on sl-MeasConfig configuration Google Inc. CR Rel-16 38.331 16.3.1 2426 - F 5G\_V2X\_NRSL-Core

R2-2100501 Corrections on the actions of measurement configuration in TS 38.331 ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.1 2329 - F 5G\_V2X\_NRSL-Core

R2-2100785 Lower layer indication in PC5 unicast link re-keying procedure vivo CR Rel-16 38.331 16.3.1 2354 - F 5G\_V2X\_NRSL-Core

R2-2100923 Correction to UE actions related to reception of the UECapabilityEnquirySidelink Samsung Electronics, OPPO CR Rel-16 38.331 16.3.0 2365 - F 5G\_V2X\_NRSL-Core

* All CRs above (listed from R2-2100977 to R2-2100923) are handled and possibly merged with RRC CR rapporteur’s miscellaneous corrections CR.

R2-2101234 Correction on SL configured grant type 1 validity under Uu RLF Nokia, Nokia Shanghai Bell, Ericsson, LG Electronics, Qualcomm, CATT CR Rel-16 38.331 16.3.1 2391 - F 5G\_V2X\_NRSL-Core

[Apple, InterDigital, MediaTek, ZTE, Intel]: Issue was discussed last meeting and companies considered the current specification covers the issue. However ok with adding the note (instead of changing any normative text). [Session chair]: RRC also covers until when the UE keeps the CG resources and when to release it? [Huawei]: Yes, it is covered. When to release CG resources is specified in the following bullet in the same section, i.e. the UE releases CG resources when T311 runs. So until T311 runs, MAC will not perform random resource selection. [LG]: Support the proposal since it can provide clearer understanding. [OPPO]: Do we need both normative text and note (both are included in CR)? [Nokia]: If we agree with proposal in the normative text, we do not need a note in addition.

* A note will be added only. Normative text changes will be removed.
* Comeback with the above changes.

R2-2100116 Clarification on the inter-frequency operation OPPO, Nokia, Nokia Shanghai Bell, Samsung Electronics, MediaTek Inc. CR Rel-16 38.331 16.3.1 2303 - F 5G\_V2X\_NRSL-Core

[Ericsson]: 38.304 was updated last meeting and wonder if it is already clear to 38.304? Do we also need 38.331 CR? [Lenovo]: Do not see the real importance of CR. [Xiaomi]: Support the proposal and it makes the specification clearer. [Huawei]: It was already discussed last meeting. [Intel]: Support the proposal. [OPPO]: Yes, 38.304 CR was discussed last meeting and during the discussion it was not crystal clear what is really allowed UE behaviour according to the current specification. Companies looked back the history to see what discussed and why we had the related normative text in 38.304 in the past. In LTE, the related UE behaviour was specified in RRC however in NR we do not in RRC, which brought the difficulties to companies to understand whole picture. Motivation of 38.304 CR is missed in RRC.

* Agree with the intention, i.e. having a note for the allowed UE behaviour.
* Detailed wordings for a note will be discussed in the email discussion.
* [AT113-e][703][V2X/SL] Discussion on detailed wording for a note (OPPO)

 **Scope:** discuss detailed wordings for a note to clarify inter-frequency operation and prepare the agreeable CR.

 **Intended outcome:** agreeable 38.331 CR in R2-2102177

 **Deadline:** Feb 04 0430 (UTC)

R2-2100787 Clarification on SSB interval value 0 vivo CR Rel-16 38.331 16.3.1 2356 - F 5G\_V2X\_NRSL-Core

[ZTE]: This should be discussed in RAN1. [MediaTek, Intel, Huawei, Qualcomm]: Agree with ZTE and consider it is not essential correction. [OPPO]: Tend to share the intention and ok to have this clarification. [Huawei]: This has not been resolved in RAN1 and it is ongoing RAN1 discussion, so we cannot make a decision in RAN2 now.

* Noted.

R2-2100118 Left issue on reset configuration OPPO discussion Rel-16 5G\_V2X\_NRSL-Core

R2-2100115 Correction reset configuration OPPO CR Rel-16 38.331 16.3.1 2302 - F 5G\_V2X\_NRSL-Core

* [AT113-e][704][V2X/SL] Left issue on reset configuration (OPPO)

 **Scope:** discuss if there is real problem with the current specification and what is the best option to solve it (if problem is justified). Prepare the agreeable CR (if needed).

 **Intended outcome:** Agreeable 38.331 CR in R2-2102178 and discussion summary in R2-2102179 (if needed).

 **Deadline:** Feb 04 0430 (UTC)

R2-2100789 Support RLC Re-establishment vivo discussion

* [AT113-e][705][V2X/SL] RLC Re-establishment (Vivo)

 **Scope:** Discuss the need of RLC re-establishment. Prepare agreeable CR (if needed).

 **Intended outcome:** Agreeable 38.331 CR in R2-2102180 and discussion summary in R2-2102181 (if needed)

 **Deadline:** Feb 04 0430 (UTC)

R2-2101232 Clarification with respect to validity of configured SL grant type 1 received in HO command Nokia, Nokia Shanghai Bell discussion Rel-16 5G\_V2X\_NRSL-Core R2-2009990

R2-2100149 DAPS HO and NR Sidelink Communication Samsung Electronics Co., Ltd discussion Rel-16 5G\_V2X\_NRSL-Core

R2-2101702 Clarification on DAPS HO configuration vivo CR Rel-16 38.331 16.3.1 2430 - F 5G\_V2X\_NRSL-Core

* Two CRs above are moved to 6.1.1.

R2-2101740 Correction on SL LCP restriction of configured grant type 1 ASUSTeK CR Rel-16 38.331 16.3.0 2434 - F 5G\_V2X\_NRSL-Core Revised

R2-2100150 Corrections to SL Resource Configuration Samsung Electronics Co., Ltd CR Rel-16 38.331 16.3.1 2305 - F 5G\_V2X\_NRSL-Core Withdrawn

R2-2101703 Clarification on DAPS HO configuration vivo CR Rel-16 38.331 16.3.1 2431 - F 5G\_V2X\_NRSL-Core Withdrawn

### 6.4.3 User plane corrections

Including [POST112-e][701][V2X] RAN1 related discussion (OPPO). This agenda item may utilize a summary document on MAC (LG).

R2-2100098 Summary of email discussion [701][V2X] RAN1 related discussion (OPPO) OPPO discussion Rel-16 Late

R2-2100099 CR on Correction on SL CG and mode2 operation OPPO CR Rel-16 38.321 16.3.0 1001 - F 5G\_V2X\_NRSL-Core Late

R2-2100117 Left issue on HARQ feedback for CG OPPO, vivo, Apple, InterDigital, Qualcomm, ZTE Corporation, Sanechips, CATT discussion Rel-16 5G\_V2X\_NRSL-Core

R2-2100119 Miscellaneous Correction on NR-V2X OPPO CR Rel-16 38.321 16.3.0 1002 - F 5G\_V2X\_NRSL-Core

R2-2100120 Left issue with RAN1 impact OPPO discussion Rel-16 5G\_V2X\_NRSL-Core

R2-2100211 Miscellaneous Correction on TS38.321 CATT CR Rel-16 38.321 16.3.0 1005 - D 5G\_V2X\_NRSL-Core

R2-2100212 Modification on the Formula of Calculating the SL\_RESOURCR\_RESELECTION\_COUNTER's Range CATT CR Rel-16 38.321 16.3.0 1006 - F 5G\_V2X\_NRSL-Core

R2-2100213 Correction on the UL Threshold and SL Threshold CATT CR Rel-16 38.321 16.3.0 1007 - F 5G\_V2X\_NRSL-Core

R2-2100323 Clarification on the Notes for UL Prioritization CATT CR Rel-16 38.321 16.3.0 1014 - F 5G\_V2X\_NRSL-Core

R2-2100412 Cancellation of triggered SL-CSI reporting SHARP Corporation discussion 5G\_V2X\_NRSL-Core

R2-2100503 Miscellaneous corrections to TS 38.321 ZTE Corporation, Sanechips CR Rel-16 38.321 16.3.0 1018 - F 5G\_V2X\_NRSL-Core

R2-2100504 Corrections on LCP in TS 38.321 ZTE Corporation, Sanechips CR Rel-16 38.321 16.3.0 1019 - F 5G\_V2X\_NRSL-Core

R2-2100688 Correction on PDCP entity re-establishment ZTE Corporation, Sanechips CR Rel-16 38.323 16.2.0 0063 - F 5G\_V2X\_NRSL-Core

R2-2100791 Left issues on TX resource (re-)selection vivo, OPPO, Apple discussion

R2-2100792 Clarification on sidelink process ID in SCI vivo discussion

R2-2100793 Draft LS to RAN1 on HARQ process number in SCI vivo LS out To:RAN1

R2-2100794 Draft LS to RAN1 on TX resource (re-)selection vivo LS out To:RAN1

R2-2100861 Correction for HARQ Options for SL groupcast Apple CR Rel-16 38.321 16.3.0 1022 - F 5G\_V2X\_NRSL-Core

R2-2101068 Miscellaneous corrections to 38.321 Nokia, Nokia Shanghai Bell CR Rel-16 38.321 16.3.0 1027 - D 5G\_V2X\_NRSL-Core

R2-2101149 Correction to Uu DRX with sidelink Nokia, Nokia Shanghai Bell CR Rel-16 38.321 16.3.0 1028 - F 5G\_V2X\_NRSL-Core

R2-2101741 MAC Corrections for NR V2X ASUSTeK CR Rel-16 38.321 16.3.0 1045 - F 5G\_V2X\_NRSL-Core

R2-2101742 MAC Corrections for sidelink BSR triggering ASUSTeK CR Rel-16 38.321 16.3.0 1046 - F 5G\_V2X\_NRSL-Core

R2-2101925 Corrections on MCS selection Huawei, HiSilicon CR Rel-16 38.321 16.3.0 1056 - F 5G\_V2X\_NRSL-Core

R2-2102222 Review Report on MAC CRs in AI 6.4.3 LG Electronics Inc. (Rapporteur) discussion Rel-16 5G\_V2X\_NRSL-Core

### 6.4.4 UE capabilities

This agenda item may utilize a summary document (OPPO).

R2-2100114 Update on V2X UE capability OPPO CR Rel-16 38.306 16.3.0 0482 - F 5G\_V2X\_NRSL-Core

R2-2101244 On the peer UE capability transfer in unicast sidelink Nokia, Nokia Shanghai Bell discussion Rel-16 5G\_V2X\_NRSL-Core

## 8.15 NR Sidelink enhancements

(NR\_SL\_enh-Core; leading WG: RAN1; REL-17; WID: RP-202846)

Time budget: 2 TU

Tdoc Limitation: 6 tdocs

Email max expectation: 6 threads

### 8.15.1 Organizational

Including incoming LSs, rapporteur inputs, etc.

R2-2100019 Reply LS on new PQI support for PC5 communication (R1-2009621; contact: OPPO) RAN1 LS in Rel-17 FS\_5G\_ProSe To:SA2 Cc:RAN2

[Session chair]: Do we need to respond it, e.g. any input from RAN2 point of view? [OPPO]: No action is needed from RAN2 side.

* Noted.

R2-2100105 Discussion on SA2 LS on sidelink DRX OPPO discussion Rel-17 NR\_SL\_enh-Core

Proposal 1 For Q1, RAN2 reply AS layer can determine DRX parameters and no additional input from V2X layer other than the currently available QoS is needed.

[CATT]: AS layer should be able to determine DRX pattern by itself like Uu DRX, however the question is whether any additional information can be helpful. [Huawei]: How to configure DRX parameters is under email discussion. It is too early to say whether it is acquired from SIB and/or dedicated RRC to SA2. Anyway think we need QoS information from the upper layer. [ZTE]: DRX cycle can be determined by upper layer. For other parameters, they can be determined in AS layer. [LG, Samsung, Ericsson, InterDigital, Xiaomi]: Similar view as OPPO. DRX parameters can be determined based on the existing QoS information provided by the upper layer. No additional information is really required.

* Agreed.

Proposal 2 Before answering Q2, RAN2 confirm SA2 conclusion that “For unicast, the PC5 DRX may be negotiated between the UEs in AS layer, pending on the feedback from RAN2”.

[Nokia]: It seems obvious and we can confirm it.

* RAN2 confirms that for unicast, the PC5 DRX may be negotiated between the UEs in AS layer.
* We can also include this RAN2 confirmation into the response LS.

Proposal 3 For Q2, RAN2 further reply that for SL unicast, other than DRX parameter negotiation/sharing reason, AS layer can provide the PC5 DRX related information to the V2X layer, and RAN2 is working on the detailed DRX parameter that applies to each cast type. RAN2 would keep SA2 being update on the RAN2 progress.

[Vivo]: What “other than DRX parameter negotiation/sharing reason” means? [OPPO]: It is made based on top of proposal 2. It means for DRX parameter negotiation for unicast, it will be done in AS.

* Agreed.

Proposal 4 For Q3, RAN2 reply that RAN2 does not think it is beneficial for broadcast and groupcast to share the PC5 DRX related information amongst UEs in the vicinity in V2X layer.

[Huawei]: We can confirm it is not feasible to do that via PC5-RRC, but how RAN2 confirms it is not feasible to do that in V2X layer. [OPPO, Vivo]: The question in SA2 LS was about V2X layer.

* Agreed.

Proposal 5 For Q4, RAN2 reply that RAN2 is working on this aspects following the WID bullet of “Specify mechanism aiming to align sidelink DRX wake-up time with Uu DRX wake-up time in an in-coverage UE”, RAN2 would keep SA2 updated on related working progress.

* Agreed.
* We can add sentence to keep SA2 updated according to RAN2 progress in general (not in the answer to the specific question)
* [AT113-e][706][V2X/SL] Response LS to SA2 (LG)

 **Scope:** discuss detailed wordings and prepare the LS to be approved.

 **Intended outcome:** approvable response LS in R2-2102182

 **Deadline:** Feb 02 1245 (UTC)

R2-2101726 (Draft) Reply LS on SA2 on PC5 DRX operation LG Electronics France LS out Rel-16 NR\_SL\_enh-Core To:SA2 Late

R2-2100798 Draft Reply LS on PC5 DRX operation vivo LS out To:SA2 Cc:RAN1

### 8.15.2 SL DRX

#### 8.15.2.1 SL DRX general

Including [POST112-e][702][SLe] High-level principles for SL DRX (LG), definition of on- and off- durations and the corresponding UE procedures, etc.

R2-2101727 Summary of [POST112-e][702][SLe] High-level principles for SL DRX LG Electronics France discussion Rel-17 NR\_SL\_enh-Core Late

Proposal 2.2-2. For SL unicast (after SL unicast link is established), SL DRX configuration can be configured per a pair of source/destination. FFS whether SL DRX operates per direction or for both directions.

[Huawei, ZTE, OPPO, InterDigital]: Per a pair of source/destination already means per direction. That is what we assumed in Rel-16 SL. [Ericsson]: prefer common DRX operates for both directions. [Apple, Qualcomm]: prefer to open the possibility of common DRX for both directions [InterDigital]: Common DRX for both directions is not justified since traffic pattern is generated in TX UE.

* Agreed.

Proposal 2.1-2. For SL groupcast/broadcast, SL DRX configuration can be configured in common. FFS on granularity of SL DRX configuration.

* Agreed.

Proposal 2.4-1. Short DRX cycle is not introduced for SL unicast, groupcast and broadcast in Rel-17.

* Agreed.

Proposal 4.1-2. For data reception, RAN2 defines the behaviour for monitoring the SCI reception (i.e., PSCCH and 2nd SCI on PSSCH) during the SL active time for SL DRX. For data reception, the UE may skip monitoring of PSCCH and 2nd SCI on PSSCH during inactive time for SL DRX. Sensing aspect is not considered in the agreement above.

[Vivo, Nokia, InterDigital, Apple]: ok with the proposal.

* Agreed.

Proposal 5.1-1a. At least, On-duration timer and Inactivity timer are supported in SL unicast.

* Agreed.

Proposal 5.1-1b. If HARQ feedback mode is enabled, HARQ RTT timer and Retransmission timer are supported in SL unicast.

Proposal 5.2-1a. At least, On-duration timer and Inactivity timer are supported for SL groupcast.

Proposal 5.2-1b. If HARQ feedback mode is enabled, HARQ RTT timer and Retransmission timer are supported in SL groupcast.

Proposal 5.3-1. On-duration timer is supported for SL broadcast.

Proposal 6-1. SL DRX Command MAC CE is introduced for SL DRX operation in Rel-17.

Proposal 7-1. In mode 1, when in RRC\_CONNECTED, if DRX is configured, the MAC entity monitors the PDCCH for the MAC entity's SL-RNTI, SLCS-RNTI and SL Semi-Persistent Scheduling V-RNTI in Uu DRX Active Time.

 Proposal 2.5-1a. For RRC CONNECTED UE, gNB determines the SL DRX configuration.

 Proposal 2.5-1b. For RRC IDLE/INACTIVE UEs, a UE can determine the SL DRX configuration. Which UE (e.g., Tx UE or Rx UE) determines SL DRX configuration is FFS.

Proposal 2.5-1c. For OOC UE, Pre-configuration parameters can be used for SL DRX configuration.

* [AT113-e][707][V2X/SL] Who will decide SL DRX pattern? (OPPO)

 **Scope:** discuss who (TX UE, RX UE or gNB) will decide SL DRX pattern or configuration in various scenarios (scenario by scenario) considering whether SL DRX is for SL unicast, groupcast or broadcast, TX and RX UEs’ RRC state (including OOC), and whether TX and RX UE’s in the same or different serving cells (including IC and OOC).

 **Intended outcome:** discussion summary and proposals in R2-2102183

 **Deadline:** Feb 02 1245 (UTC)

Proposal 5.1-2. Values of On-duration timer and Inactivity timer can be configured to different values per PC5 RRC Connection.

Proposal 5.1-3. The value of HARQ RTT timer and the Retransmission timer can be separately configured per PC5 RRC connection.

Proposal 5.2-2. Values of On-duration timer and Inactivity timer can be configured to different values per each SL groupcast session.

Proposal 5.2-3. The value of HARQ RTT timer and the Retransmission timer can be separately configured per each SL groupcast session.

Proposal 5.3-2. Values of On-duration timer can be configured to different values per each SL broadcast session.

[Session chair]: skip the above proposals in the discussion (stage 3 details).

Additional discussion followed by email discussion:

Q1: common approach for SL groupcast/broadcast as SL unicast, i.e. timer-based SL DRX or different approach for SL groupcast/broadcast, i.e. separate resource pool based SL DRX?

Q2: can we confirm working assumption to also consider sensing impact in SL DRX or should we wait for RAN1 decision or response LS?

Q3: granularity of SL DRX operation for SL groupcast/broadcast?

* Option 1: single SL DRX operation for all
* Option 2: one SL DRX operation for all SL groupcast and another one for SL broadcast.
* Option 3: SL DRX operation per service type/destination id
* Option 4: SL DRX operation per QoS level
	+ What will be used as QoS level?
* Option 5: SL DRX operation per geo-location
* [AT113-e][708][V2X/SL] Granularity of SL DRX operation for groupcast/broadcast (Lenovo)

 **Scope:** discuss options identified above (including some level of understanding on how it works, e.g. what information can represent QoS level to differentiate SL DRX operation, how geo-location can work, etc., challenges, pros, and cons for each option) and check companies’ views. Note companies can add additional option if the option proposed in the contribution was missed.

 **Intended outcome:** discussion summary and proposals in R2-2102184

 **Deadline:** Feb 02 1245 (UTC)

Q4: details of how to maintain the defined timers (including when and how to use them, peer TX UE’s behaviour, etc.)

R2-2100235 Sidelink DRX Granularity CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2100236 Sidelink DRX Timer Maintainence and Active Time Definition CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2100272 Left issues on definition of SL DRX functionality OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2100274 Discussion on granularity for sidelink DRX OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2100496 Discussion on principles for sidelink DRX ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2100497 Discussion on timer configuration for sidelink DRX ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2100514 Definition of the Active Time in SL DRX InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2100515 Procedures for Handling the DRX Configuration InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2100536 General aspects for SL DRX Ericsson discussion Rel-17 NR\_SL\_enh-Core R2-2009231

R2-2100573 General Principle of NR SL DRX Fraunhofer IIS, Fraunhofer HHI discussion

R2-2100622 On general Sidelink DRX design Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2100637 Discussion on SL DRX LG Electronics France discussion Rel-17 NR\_SL\_enh-Core

R2-2100638 Discussion on SL DRX Timer LG Electronics France discussion Rel-17 NR\_SL\_enh-Core

R2-2100690 [draft]LS to RAN1 on SL DRX timer configuration ZTE Corporation, Sanechips LS out Rel-17 NR\_SL\_enh-Core To:RAN1

R2-2100795 SL DRX remaining issues vivo discussion

R2-2100862 Discussion on remaining issues on SL DRX Configuration Apple discussion Rel-17 NR\_SL\_enh-Core

R2-2101224 Discontinuous reception and transmission in SL Lenovo, Motorola Mobility discussion NR\_SL\_enh-Core

R2-2101245 Discussion on Sidelink DRX Qualcomm Finland RFFE Oy discussion Rel-17

R2-2101323 Backward Compatibility Issue of SL DRX with Rel.16 Sidelink Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SL\_enh-Core

R2-2101330 Granularity of SL DRX operation Samsung Research America discussion

R2-2101600 Discussion on sidelink DRX timer handling Xiaomi communications discussion

R2-2101723 Consideration on sidelink DRX for groupcast and broadcast Huawei, HiSilicon discussion

R2-2101725 General aspects of SL DRX for unicast Huawei, HiSilicon discussion

R2-2101756 Discussion on Sidelink DRX ASUSTeK discussion Rel-17 NR\_SL\_enh-Core

#### 8.15.2.2 Mechanism to align wake-up time between TX and RX UEs

R2-2100237 Sidelink DRX Configuration Procedure for Sidelink Unicast CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2100273 Discussion on configuration for sidelink DRX OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2100421 Reservation Chain-based DRX Power Saving Fujitsu discussion Rel-17 NR\_SL\_enh-Core

R2-2100422 Alignment of Wake-up Time between TX and RX UEs Fujitsu discussion Rel-17 NR\_SL\_enh-Core R2-2009133

R2-2100495 Discussion on Mechanism to align wake-up time between TX and RX UEs ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2100539 SL DRX alignment between two UEs Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2100574 NR SL DRX Alignment between UEs Fraunhofer IIS, Fraunhofer HHI discussion

R2-2100629 Alignment of DRX active time among sidelink UEs Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2100657 Inter-UE sidelink DRX wake-up time alignment Spreadtrum Communications discussion Rel-17 NR\_SL\_enh-Core

R2-2100796 Mechanism to align wake-up time between TX and RX UEs vivo discussion

R2-2100863 Discussion on HARQ related timers in SL DRX Apple discussion Rel-17 NR\_SL\_enh-Core

R2-2101117 Discussion on wake-up time alignment between Tx and Rx UEs Lenovo, Motorola Mobility discussion Rel-17

R2-2101192 Issue with SL DRX Inactivity Timer for SL groupcast Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SL\_enh-Core

R2-2101207 SL DRX with pre-indicated resources Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SL\_enh-Core

R2-2101209 On the discrepancy TX-centric vs. RX-centric in Sidelink DRX Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SL\_enh-Core

R2-2101246 On Wake-up alignment between Tx and Rx UEs Qualcomm Finland RFFE Oy discussion Rel-17

R2-2101331 Alignment of wake-up time between TX and RX UEs Samsung Research America discussion

R2-2101598 DRX coordination between TX and RX UE Xiaomi communications discussion

R2-2101645 On aligning wake-up time between TX and RX UEs MediaTek Inc. discussion Rel-17 NR\_SL\_enh-Core

R2-2101652 Sidelink DRX Considerations Convida Wireless discussion Rel-17 NR\_SL\_enh-Core

R2-2101706 Discussion on SL DRX wake-up time alignment between inter-UEs LG Electronics France discussion Rel-17 NR\_SL\_enh-Core

R2-2101762 Consideration on the sidelink DRX for unicast Huawei, Hisilicon discussion

R2-2101866 Methods for aligning SL DRX between UEs Sierra Wireless, S.A. discussion Rel-17

#### 8.15.2.3 Coordination between Uu DRX and SL DRX

R2-2100275 Discussion on network involvement for SL related DRX OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2100494 Discussion on Coordination between Uu DRX and SL DRX ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2100538 DRX alignment between Uu and SL Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2100575 NR SL DRX Uu and SL Wake-Up Time Fraunhofer IIS, Fraunhofer HHI discussion

R2-2100623 Alignment of Uu and SL DRX active time Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2100797 Coordination between Uu DRX and SL DRX vivo discussion

R2-2100864 Discussion on alignment of Uu DRX and SL DRX Apple discussion Rel-17 NR\_SL\_enh-Core

R2-2100931 Coordination between Uu DRX and SL DRX Lenovo, Motorola Mobility discussion Rel-17 NR\_SL\_enh-Core

R2-2101247 On coordination between Uu DRX and SL DRX Qualcomm Finland RFFE Oy discussion Rel-17

R2-2101306 On configuration and operation of SL DRX Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh-Core R2-2010058

R2-2101332 Coordination between DL DRX and SL DRX Samsung Research America discussion

R2-2101599 DRX coordination between Uu and sidelink Xiaomi communications discussion

R2-2101646 On coordination between Uu DRX and SL DRX MediaTek Inc. discussion Rel-17 NR\_SL\_enh-Core

R2-2101763 Discussion on SL communication impact on Uu DRX Huawei, Hisilicon discussion

R2-2101764 Alignment between Uu DRX and SL DRX Huawei, Hisilicon discussion

R2-2101791 Alignment scheme for Uu DRX and SL DRX LG Electronics Inc. discussion Rel-17 NR\_SL\_enh-Core

R2-2101855 Methods for configuring SL DRX relative to Uu DRX Sierra Wireless, S.A. discussion Rel-17

R2-2100917 Discussion on Sidelink DRX and sensing Sony discussion Rel-17 NR\_SL\_enh-Core

#### 8.15.2.4 Others

R2-2100238 Impacts of Sidelink DRX on the Other Procedures CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2100499 Discussion on sensing and DRX ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2100537 Interaction between partial sensing and DRX Ericsson discussion Rel-17 NR\_SL\_enh-Core R2-2009232

R2-2101333 Transmission UE behaviours for SL DRX Samsung Research America discussion

R2-2101869 View on resource selection in mode 2 ITL discussion

### 8.15.3 Resource allocation enhancements RAN2 scope

R2-2100240 Mixing Blind and Feedback-based HARQ Retransmissions CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2100423 Dual-mode Configuration and Selection Mechanism for NR Sidelink Fujitsu discussion Rel-17 NR\_SL\_enh-Core R2-2009134

R2-2101335 Inter-UE coordination Samsung Research America discussion

R2-2100577 Power Reduction for Sidelink Mode 2 Resource Allocation Fraunhofer IIS, Fraunhofer HHI discussion

R2-2100239 Consideration on the Resource Allocation Enhancements CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2100276 Discussion on inter-UE coordination OPPO discussion NR\_SL\_enh-Core

R2-2100498 Discussion on inter-UE coordination ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2100516 Performing Mode 2 Resource Allocation when configured with SL DRX InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2100517 [DRAFT] LS on RAN1 impact on sidelink DRX InterDigital LS out Rel-17 NR\_SL\_enh-Core To:RAN1

R2-2100518 RAN2 Aspects of Resource Allocation with Inter-UE Coordination InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2100576 Inter-UE Coordination for Sidelink Mode 2 Resource Allocation Fraunhofer IIS, Fraunhofer HHI discussion

R2-2100613 Resource Allocation Enhancements for Power Saving Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2100659 Discussion on resource allocation enhancement for NR sidelink Spreadtrum Communications discussion Rel-17 NR\_SL\_enh-Core

R2-2100799 Uu and SL DRX impact to resource allocation mode 1 vivo discussion

R2-2100800 SL DRX impact to resource allocation mode 2 vivo discussion

R2-2100865 Discussion on resource allocation for Pedestrian UE Apple discussion Rel-17 NR\_SL\_enh-Core

R2-2100981 General principles of resource allocation enhacements for SL mode 2 Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2100982 Way forward for resource allocation enhacements for SL mode 2 Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2101116 Discussion on sidelink resource allocation enhancements Lenovo, Motorola Mobility discussion Rel-17

R2-2101299 Inter-UE Coordination for Enhanced Reliability Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2101303 Congestion control for Resource Allocation Schemes in NR Sidelink Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2101318 Coexistence of Sensing-based and Random Selection for Sidelink Mode 2 Resource Allocation Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh-Core

R2-2101334 Random selection and partial sensing Samsung Research America discussion

R2-2101647 Transmission of assistance information for Mode 2 enhancement MediaTek Inc. discussion Rel-17 NR\_SL\_enh-Core

R2-2101650 On Resource Allocation Mode 2 Enhancement for NR Sidelink Convida Wireless discussion Rel-17 NR\_SL\_enh-Core R2-2010144

R2-2101724 Consideration on resource allocation enhancement in Rel-17 NR SL enhancement Huawei, HiSilicon discussion

R2-2101795 Power efficient resource allocation LG Electronics Inc. discussion Rel-17 NR\_SL\_enh-Core

R2-2101796 Inter-UE coordination for NR V2X LG Electronics Inc. discussion Rel-17 NR\_SL\_enh-Core

### 8.15.4 Other

R2-2100519 Discussion on Uu DRX for SL UE InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2101648 On SL sync search optimization MediaTek Inc. discussion Rel-17 NR\_SL\_enh-Core