3GPP TSG-RAN WG2 Meeting #119bis electronic R2-22xxxxx
Online, October 10 – 19, 2022

Agenda Item: 9.5

Source: Session Chair (Samsung)

Title: Report from session on NR SL

Document for: Approval

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

## List and Status of Offline Email Discussions

**[POST] Email discussion**

**[AT] Email discussion**

## Approved outgoing LSs

## 6.15 NR Sidelink enhancements

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

Tdoc Limitation: 3 tdocs

Note some agenda item(s) may use pre-meeting discussion based on a summary document.

### 6.15.1 Organizational

Including incoming LSs, rapporteur inputs, etc.

R2-2209310 Reply LS to RAN2 on RRC parameters for IUC Scheme 1 and default CBR configuration (R1-2208090; contact: Huawei) RAN1 LS in Rel-17 NR\_SL\_enh-Core To:RAN2

R2-2209311 Reply LS on power-saving resource allocation with absent sl-AllowedResourceSelectionConfig (R1-2208097; contact: vivo) RAN1 LS in Rel-17 NR\_SL\_enh-Core To:RAN2

R2-2209349 Reply LS to RAN2 on Tx profile (S2-2207033; contact: vivo) SA2 LS in Rel-17 eV2XARC\_Ph2, 5G\_ProSe, NR\_SL\_enh-Core To:RAN2 Cc:CT1

[Apple]: For R2-2209310, we need correction for the corresponding field description for the first RAN1 response. [Session chair]: Let’s discuss as part of email discussion [501]. Apple will contact RRC CR rapporteur with suggested change.

* All LSs above are noted.

### 6.15.2 Control plane corrections

R2-2209462 Discussion on the LS in R1-2208121 on open-loop power control (OLPC) parameters for NR sidelink vivo discussion Rel-17 NR\_SL\_enh-Core

Proposal 1a (modified): For each Tx pool configuration in SIB12 and dedicated signalling, legacy Rel-16 OLPC parameters for NR SL with suffix “-r16” are not used in Rel-17 Spec (and later release on), meaning:

* A Rel-17 OLPC capable UE will ignore the legacy Rel-16 OLPC parameters for NR SL with suffix “-r16” if Rel-17 OLPC parameters are configured for NR SL with suffix “-r17”. FFS whether UE capability aspect need to be specified in FD.
* Agreed.

[Ericsson]: We can only agree with the first bullet. Second bullet is up to network implementation. [OPPO]: For UE dedicated reconfiguration, the network already knows UE release, so it does not happen. [Nokia]: Agree with Ericsson. [Vivo]: It may happen for UE dedicated reconfiguration because this parameter is defined as need code ‘M’ and ‘S’. [ZTE]: Is this a RAN1 issue? [Ericsson]: Do we really need to capture the UE capability aspect? We don’t capture all UE capability aspects in FD. However, it’s ok with capturing it as agreement in session minutes. [Huawei]: Agree with Ericsson. [Vivo]: For SIB, we may need to capture UE capability aspect since NW does not know UE capability. For UE dedicated reconfiguration, agree with Ericsson. [Session chair]: Let’s discuss wordings as part of email discussion.

Proposal 2: Dummify the Rel-16 OLPC parameters for NR SL in Rel-17 Spec, and capture in the field description for each of the dummified field that “This field is not used in the specification. If received it shall be ignored by the UE.”

* Not pursued.

Proposal 3: Capture in the field description for each of the new Rel-17 OLPC parameters that for the UE capable of the new OLPC feature for NR SL, indicates the P0 value used for the corresponding OLPC mechanism on the corresponding channel. If not configured, the corresponding OLPC mechanism for NR SL is disabled.

* Not pursued.

Proposal 4: For the UE incapable of the new Rel-17 OLPC feature for NR SL, confirm that it follows the default operation as if the related OLPC features not configured, i.e. corresponding OLPC mechanism is disabled on the corresponding channel. Capture this in the field description of the new Rel-17 OLPC parameters for NR SL.

* Not pursued.

R2-2209858 Corrections to 38331 on OLPC parameters Ericsson CR Rel-17 38.331 17.2.0 3514 - F NR\_SL\_enh-Core

* Will be handled in email discussion [501].

R2-2209380 Discussion on left issues on control plane procedure OPPO discussion Rel-17 NR\_SL\_enh-Core

=> Revised in R2-2210779

R2-2210779 Discussion on left issues on control plane procedure OPPO discussion Rel-17 NR\_SL\_enh-Core

Proposal 1 For sl-Condition1-A-2, it is up to UE implementation to evaluate “when it is intended receiver of UE-B”, e.g., it may be judged by the existence of unicast connection. No further specification impact.

* Agreed.

[Apple]: RAN1 didn’t respond our question well. How does UE-A determine it is intended receiver of UE-B? For example, if UE-A has unicast link with UE-B. [Vivo, ZTE, Qualcomm, Ericsson, CATT, Intl, Xiaomi]: Ok to leave it to UE implementation.

R2-2210373 Rapporteur CR on TS 38.331 for SL enhancements Huawei, HiSilicon CR Rel-17 38.331 17.2.0 3541 - F NR\_SL\_enh-Core Late

R2-2209739 Miscellaneous corrections on TS 38.331 for SL DRX CATT CR Rel-17 38.331 17.2.0 3502 - F NR\_SL\_enh-Core

R2-2209740 Miscellaneous corrections on TS 38.331 for SL enhancement CATT CR Rel-17 38.331 17.2.0 3503 - F NR\_SL\_enh-Core

R2-2210542 Miscellaneous corrections on 38.331 vivo CR Rel-17 38.331 17.2.0 3551 - F NR\_SL\_enh-Core

R2-2209878 Correction on 38.331 Xiaomi draftCR Rel-17 38.331 17.2.0 F NR\_SL\_enh-Core

R2-2209772 Correction on SL transmission by OOC UE for SL communication and SL discovery Apple CR Rel-17 38.331 17.2.0 3505 - F NR\_SL\_enh-Core

R2-2209857 Discussion on RAN1 LS R1-2208090 Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2210555 Clarification of default CBR parameters Samsung Research America CR Rel-17 38.331 17.2.0 3553 - F NR\_SL\_enh-Core

R2-2209463 Discussion on the LS in R2-2209311 for default resource selection scheme vivo discussion

R2-2209379 Correction for SL DRX OPPO draftCR Rel-17 38.331 17.2.0 F NR\_SL\_enh-Core

R2-2209674 correction on RRC spec for SUI initiation and IUC parameter ZTE Corporation, Sanechips draftCR Rel-17 38.331 17.2.0 F NR\_SL\_enh-Core

* [AT119bis-e][501][V2X/SL] 38.331 corrections (Huawei)

 **Scope:** Discuss proposed corrections in R2-2210373, R2-2209739, R2-2209740, R2-2210542, R2-2209878, R2-2209772, R2-2209857, R2-22010555, R2-2209463, R2-2209674, and P4 and P5 in R2-2210779 (corresponding CR in R2-2209379). Merge agreeable corrections in a CR as much as possible (we may have separate CR if required, it’s up to rapporteur).

 **Intended outcome:** 38.331 CR in R2-2210930 and discussion summary in R2-2210931 (if needed). Email approval.

**Deadline:** 10/17 12:00 (UTC)

R2-2210259 Correction on LCID Assignment for SL LCH InterDigital, ASUSTek CR Rel-16 38.331 16.10.0 3531 - F 5G\_V2X\_NRSL-Core

R2-2210260 Correction on LCID Assignment for SL LCH InterDigital, ASUSTek CR Rel-17 38.331 17.2.0 3532 - A NR\_SL\_enh-Core

R2-2210544 Discussion and TP on LS of TX profile vivo discussion Rel-17

R2-2210543 Miscellaneous corrections to SL DRX vivo CR Rel-17 38.300 17.2.0 0567 - F NR\_SL\_enh-Core

R2-2209677 Correction on Tx profile operation ZTE Corporation, Sanechips draftCR Rel-17 38.300 17.2.0 F NR\_SL\_enh-Core

R2-2210376 Miscellaneous corrections on TS 38.300 for NR sidelink Xiaomi CR Rel-17 38.300 17.2.0 0566 - F NR\_SL\_enh-Core

R2-2209676 correction on SUI message ZTE Corporation, Sanechips draftCR Rel-17 38.331 17.2.0 F NR\_SL\_enh-Core Withdrawn

R2-2210550 Clarification of default CBR parameters Samsung Research America CR Rel-17 38.331 17.2.0 3552 - F NR\_SL\_enh-Core Withdrawn

### 6.15.3 User plane corrections

R2-2210258 Summary of [Post119-e][512][V2X/SL] Remaining Corrections (InterDigital) InterDigital discussion Rel-17 NR\_SL\_enh-Core

Proposal 1: Adopt the following formula for sl-drx-SlotOffset in the current MAC specifications:

* sl-drx-SlotOffset (ms) = (Destination Layer-2 ID modulo the number of slots in one subframe)/(the number of slots in one subframe)
* Agreed.

Proposal 2: Agree to first change in R2-2208350 and further discuss handling of 2nd change as part of an CR generated by the email rapporteur.

* Will be revisited next meeting

R2-2210261 Correction on SL DRX Offset Calculation InterDigital, ASUSTek CR Rel-17 38.321 17.2.0 1428 - F NR\_SL\_enh-Core

* Agreed in principle.

R2-2210262 UL/SL Prioritization for SL Relay InterDigital, Ericsson discussion Rel-17 NR\_SL\_enh-Core

Proposal 1: For SL transmissions by a UE to NW relay UE, direct comparison of Uu priority of UL transmissions and equivalent Uu priority of relayed SL transmissions is used for UL/SL prioritization.

Proposal 2: For SL transmissions by a UE to NW relay UE, the equivalent Uu priority of relayed SL transmissions is the priority of Uu LCH corresponding to the received (in the adaptation layer header) remote UE’s bearer ID

Proposal 3: Agree on changes to the MAC specification in the appendix.

[OPPO]: Current specification can work and it is optimization we should avoid at this late phase. [ZTE, LG, MediaTek, Intel, Apple]: Agree with OPPO. In addition, network can handle it by smart implementation. [IDC]: It is not optimization. Rel-16 prioritization is not perfect due to restriction (i.e. no direct comparison between Uu and SL). In SL UE2NW relay, since SL forwards Uu data that is associated Uu QoS, it is good to remove this restriction. [Huawei, Ericsson]: Supports the proposal. [Vivo]: Note proposal will bring an inter-operability issue.

* Not agreed.

R2-2210309 IUC for random resource allocation Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh-Core

Proposal 1: RAN2 to discuss and select a procedure to avoid an unreasonable trigger of sensing;

* Option A: Allow UE-A to discard IUC request in certain scenarios
* Option B: Allow UE-A to send empty IUC information in certain scenarios

[Vivo]: Understand the motivation. We need to first discuss whether the UE that performs random resource selection cannot perform sensing for IUC purpose. [OPPO]: Think the UE that perform random resource selection can perform sensing for IUC purpose. [Nokia]: It is not reasonable UE-A should perform sensing because of UE-B, e.g. UE-A selected random resource selection for power saving, but if it performs sensing because of UE-B IUC, power saving gain will be gone. [LG]: In RAN1, it was assumed UE-A performs sensing when generating IUC information. It’s up to UE-A whether to generate IUC information or not regardless of whether UE-A performs sensing or not (including random resource selection). [Lenovo, ZTE, CATT, Ericsson, Huawei, Qualcomm, Xiaomi]: Agree with LG. [Nokia]: Ok with LG’s comment, but we may need to capture in the spec, e.g. note.

* It’s up to UE-A implementation whether to generate IUC information or not. We can capture RAN1 agreement as note in MAC. Detailed wording will be handled in the email discussion [502].

Proposal 2: In case option 2 is selected, RAN2 to agree on the CR in R2-2210335

R2-2210335 Draft CR on IUC information transmission considerations Nokia, Nokia Shanghai Bell draftCR Rel-17 38.321 17.2.0 F NR\_SL\_enh-Core

R2-2209387 Discussion on left issues on user plane procedure OPPO discussion Rel-17 NR\_SL\_enh-Core

Proposal 2 RAN2 confirm when SL-RLF (TS 38.331 clause 5.8.9.3, due to max ARQ retransmission, T400 expiry, IP check failure, max DTX reception) happens, UE quits from active-time of the concerned unicast link.

Proposal 3 RAN2 capture UE quits from active time of the concerned unicast link when SL-RLF happens via a NOTE as in appendix.

[Ericsson]: When SL-RLF is declared, the corresponding UC link is released, and all timers and configurations will be released. It is already covered, so we don’t need any change. [Lenovo, Qualcomm, CATT, LG, Intel, Huawei, Apple, ZTE, Xiaomi, MediaTek]: Agree with Ericsson.

* Not pursued.

R2-2209684 Clarification on quitting from active time Huawei, HiSilicon discussion Rel-17 NR\_SL\_enh-Core Late

Proposal 2: RAN2 discuss three following options for UE to quit from active time when the link establishment is failed, and select TP 1 or TP 2 for corresponding spec changes:

* Option 1: UE quits from active time when the link establishment is failed, how to determine the link establishment is failed is up to UE implementation.
* Option 2: UE quits from active time when upper layer provided the indication of deactivation of the PC5 unicast security protection and deletion of security context for the PC5 unicast link, in case that link is not established.
* Option 3: UE quit from active time when receiving the indication of link establishment failure from upper layer.

[Huawei]: Prefer option1 since no change is required in SA2. [OPPO]: Not sure why the current text is not enough. [Session chair]: The issue is whether we will use the specified indications from upper layer or we will leave it to UE implementation regarding how that indication is provided by upper layer. [Ericsson]: We can survive with the current text without note. No feature is broken. [Qualcomm]: It’s late contribution so it will be good to provide more time to think about. [LG. Lenovo]: Agree with Ericsson.

* Not pursued.

R2-2210188 User plane corrections on NR Sidelink enhancements LG Electronics France CR Rel-17 38.321 17.2.0 1426 - F NR\_SL\_enh-Core Late

R2-2209388 Miscellaneous corrections on TS 38.321 for SL enhancements OPPO draftCR Rel-17 38.321 17.2.0 F NR\_SL\_enh-Core

R2-2209542 Correction to resource (re-)selection for SL DRX SHARP Corporation CR Rel-17 38.321 17.2.0 1410 - F NR\_SL\_enh-Core

R2-2209543 Correction to resource (re-)selection for UE configured with neither SL DRX nor IUC SHARP Corporation CR Rel-17 38.321 17.2.0 1411 - F NR\_SL\_enh-Core

R2-2209544 Corrections to resource (re-)selection for Inter-UE coordination SHARP Corporation CR Rel-17 38.321 17.2.0 1412 - F NR\_SL\_enh-Core

R2-2209675 Correction on MAC Spec for IUC ZTE Corporation, Sanechips draftCR Rel-17 38.321 17.2.0 F NR\_SL\_enh-Core

R2-2209741 Miscellaneous corrections on TS 38.321 for NR sidelink CATT CR Rel-17 38.321 17.2.0 1415 - F NR\_SL\_enh-Core

R2-2209853 Corrections on SL enhancements ASUSTeK CR Rel-17 38.321 17.2.0 1416 - F NR\_SL\_enh-Core

R2-2209859 Capturing TX profile in the MAC spec Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2209874 Corrections to BWP inactivity timer handling for SL Samsung Electronics CR Rel-17 38.321 17.2.0 1419 - F NR\_SL\_enh-Core

R2-2209895 Clarification on destination UE(s) for SL DRX Huawei, HiSilicon CR Rel-17 38.321 17.2.0 1421 - F NR\_SL\_enh-Core Late

R2-2210113 Correction on resource re-selection in IUC scheme 2 NEC Corporation CR Rel-17 38.321 17.2.0 1424 - F NR\_SL\_enh-Core

R2-2210374 Handling the running SL DRX timers upon receiving the SL DRX reconfiguration Huawei, HiSilicon discussion Rel-17 NR\_SL\_enh-Core Late

R2-2210382 Miscellaneous corrections on TS 38.321 for NR sidelink Xiaomi CR Rel-17 38.321 17.2.0 1431 - F NR\_SL\_enh-Core

R2-2210545 Miscellaneous corrections on 38.321 vivo CR Rel-17 38.321 17.2.0 1433 - F NR\_SL\_enh-Core

R2-2210558 Clarification of slot(s) associated with the announced periodic transmission(s) Samsung Research America CR Rel-17 38.321 17.2.0 1435 - F NR\_SL\_enh-Core

R2-2210608 Correction to transmission of IUC information request Nokia, Nokia Shanghai Bell draftCR Rel-17 38.321 17.2.0 F NR\_SL\_enh-Core

* [AT119bis-e][502][V2X/SL] 38.321 corrections (LG)

 **Scope:** Discuss proposed corrections in R2-2210188, R2-2209388, R2-2209542, R2-2209543, R2-2209544, R2-2209675, R2-2209741, R2-2209853, R2-2209859, R2-2209874, R2-2209895, R2-2210113, R2-2210374, R2-2210382, R2-2210545, R2-2210558, R2-2210608, P1 in R2-2209387, P1 in R2-2209684, and P2, P3 in R2-2210779. Merge agreeable corrections in a CR as much as possible (we may have separate CR if required, it’s up to rapporteur).

 **Intended outcome:** 38.321 CR in R2-2210932 and discussion summary in R2-2210933 (if needed). Email approval.

**Deadline:** 10/17 12:00 (UTC)

R2-2210377 Miscellaneous corrections on TS 38.320 for NR sidelink Xiaomi CR Rel-17 38.321 17.2.0 1430 - F NR\_SL\_enh-Core Withdrawn

R2-2210551 Clarification of slot(s) associated with the announced periodic transmission(s) Samsung Research America CR Rel-17 38.321 17.2.0 1434 - F NR\_SL\_enh-Core Withdrawn

## 8.15 NR Sidelink evolution

(NR\_SL\_enh2; leading WG: RAN1; REL-18; WID: RP-221938)

Time budget: 0.5 TU

Tdoc Limitation: 2 tdocs

Note some agenda item(s) may use pre-meeting discussion based on a summary document.

### 8.15.1 Organizational

Incoming LS and rapporteur inputs.

R2-2209374 Work plan of R18 SL-Evo OPPO Work Plan Rel-18 NR\_SL\_enh2

=> Noted.

### 8.15.2 SL-U: RAN2 scope

CAPC definition (e.g. relation to SL priority or PQI, fixed or configurable, etc.), LBT impact to MAC (LBT failure, resource allocation, DRX operation, etc.), and any other RAN2 scopes.

* [AT119bis-e][503][V2X/SL] CAPC (OPPO)

 **Scope:** Discuss SL CAPC:

 Q1: SL CAPC determination based on PQI or SL priority or any other?

 Q2: For SL DRBs, is SL CAPC (pre)configurable or fixed?

 Q3: For SL SRBs and SL MAC CEs, is SL CAPC (pre)configurable or fixed?

 Q4: If SL CAPC is determined based on PQI, e.g. what should be criterion to make a mapping table? what is companies’ thinking on mapping table between CPAC and PQI?

 Q5: If SL CAPC is determined based on PQI, how to handle non-standardized PQI?

 Q6: How to SL CAPC when different SL LCHs, SL MAC CEs and SL SRBs are multiplexed?

 **Intended outcome:** Discussion summary in R2-2210934.

**Deadline:** 10/13 10:00 (UTC), will be handled in R18 SL session.

[Ericsson, Qualcomm]: Since RAN1 still defines the parameters for each CAPC value, it may be difficult to agree a detailed mapping table.

R2-2210934 Summary of [AT119bis-e][503][V2X/SL] CAPC (OPPO) OPPO discussion Rel-18 NR\_SL\_enh2

Proposal 1(modified): (17/19) PQI is used to determine the CAPC mapping as in NR-U. FFS whether the same principle is also applied to the UE side.

* Working assumption: PQI is used to determine the CAPC mapping as in NR-U. FFS whether the same principle is also applied to the UE side.

[Apple]: With PQI-based CAPC, we identify 3 issues. 1) how to (pre)configure CAPC per logical channel of SL-DRB for Mode 2 UE in IDLE/INACTIVE state and OOC UE? 2) How to avoid conflicting between CAPC and L1 priority in SCI which both serve intention of resource grabbing? 3) In case of non-standardized PQI NOT reported to NW, how to handle Mode 2 UE in IDLE/INACTIVE and OOC UE? [Ericsson]: For 1), if multiple QoS flows are mapped to the same DRB, meaning they are similar in terms of QoS, therefore, either only one flow or multiple flows are being actually carried by the RB is not the issue, since they are similar in terms of QoS. For 2), one thing to clarify is that, CAPC is not used for resource grabbing, it is only used for channel access purpose, while, L1 priority is used for resource grabbing. So, CAPC is mainly defined to ensure a good balance between QoS consideration and fairness of channel access. From this perspective, there is no difference between NR-U and SL-U. For 3), we don’t really understand, in NR-U, there is also non-standardized 5QI. In that case, the gNB or UE chooses the standardized 5QI values which best matches the QoS of the non-standardized values. There is no difference between NR-U and SL-U either. [IDC]: Is the proposal common to both gNB and UE? Or only to gNB or UE? [OPPO]: In NR, it is for the network side when to configure CAPC for DRB. [Ericsson]: It should be applied to both gNB and UE. [Lenovo, Intel, Xiaomi, ZTE, CATT, Huawei, ZTE, MediaTek, Qualcomm]: Agree with Ericsson. [Vivo]: For idle/inactive/OOC UE, alternative option would be to configure/define CAPC for default DRB. [IDC]: Agree with Vivo. [Huawei]: Mapping table is to handle fairness with WiFi side regardless of whether TX is gNB or UE, so it should be commonly applied to both gNB and UE. [Lenovo]: Second FFS is not clear. [Session chair]: Since P1 is changed to working assumption (not as agreement), second FFS is not really required now.

 Proposal 2(modified): (19/19) For SL-DRB the CAPC value is (pre)configurable per-DRB as in NR-U.

* Agreed.

[CATT]: Prefer putting FFS for pre-configuration case. Mapping between QoS and DRB is not fixed. [Apple, Ericsson, Huawei]: We can agree with P2 for high level principle and details of mapping can be further discussed later.

 Proposal 3-1: (18/18) For all SL-SRBs, CAPC value is fixed to the highest priority (i.e., lowest CAPC value).

* Agreed.

 Proposal 3-2: (18/19) If PQI-based CAPC mapping is agreed, for all SL MAC CEs, CAPC value is fixed to the highest priority (i.e., lowest CAPC value).

* Agreed.

 Proposal 4-1: (16/16) If PQI-based CAPC mapping is agreed, at least PDB can be used as the criterion to determine the CAPC mapping. FFS if any other additional criterions needed.

* Agreed.

[IDC]: PDB is something that only UE can be aware. [Apple]: PDB associated with PQI should be also known to the gNB. [Ericsson]: In NR-U, PDB was also considered. [Intel]: Should we send LS to RAN1 to check? [OPPO, Lenovo]: It is RAN2 responsibility.

Proposal 5: (19/19) As in NR-U, if SL CAPC is determined based on PQI, as a baseline, for non-standardized PQI, to use the CAPC of the standardized PQI which best matches the QoS characteristics of the non-standardized PQI. FFS if any specific work needed for RRC\_INACTIVE/RRC\_IDLE/OOC UEs.

* Agreed.

[Vivo]: The QoS flow with QoS profile of non-standardized PQI can be mapped to default SL-DRB, so it is not clear whether there is associated ‘default CPAC’ configuration. Also, if we make the UE to use the same principle in NR-U, it is also not clear for the same non-standardized PQI, whether the peer Ues can have different implementation of the principle, leading to one UE always adopting higher priority CAPC value while the other UE always adopting a lower priority CAPC value. [Intel]: We assume that we have to rely on UE implementation to perform this mapping under the same principle as the CONNECTED mode.

Proposal 6(modified): (16/19) If PQI-based CAPC mapping is agreed, as in NR-U, to determine the CAPC of the SL TB when the CAPC is not indicated in the DCI:

1) If only SL MAC CE(s) are included in the SL TB, the highest priority SL CAPC of those SL MAC CE(s) is used; FFS whether this rule can be extended to the case when SL MAC CE(s) multiplexed with STCH.

2) If SCCH SDU(s) are included in the SL TB, the highest priority SL CAPC is used;

3) FFS when SL CAPC of the SL logical channel(s) with MAC SDU multiplexed in the SL TB is used otherwise.

[Lenovo]: There was already in NR-U a lengthy discussion on whether to select the highest CAPC value (lowest priority) of LCHs multiplexed in a TB. Already for Rel-16 NR companies had a concern that the selection of the lowest priority CAPC for a MAC PDU which multiplexes different LCHs is not optimal since high priority data will be subject to delay when lower priority data is multiplexed in the same MAC PDU. The reason why it was though finally decided to go for the lowest priority CAPC value was the fact that for NR-U CG transmission, the traffic type is was assumed to be predictable, and the network could also make sure by proper configuration that LCHs with similar CAPC are multiplexed into the same MAC PDU. However, for SL mode 2 transmission we don’t think that same assumptions cannot be made anymore. Therefore, reusing simple the NR-U principle, i.e., always selecting the highest CAPC value (lowest priority) of LCHs multiplexed in a TB, may lead to some problems. [Vivo, Lenovo]: SBCCH is missing. [Qualcomm, Ericsson]: 3) in NR-U was decided for the fairness, w. WiFi in NR-U. [Lenovo]: LAA already changed it compared to NR-U. It was agreed there is no fairness issue.

* [AT119bis-e][504][V2X/SL] Consistent SL LBT failure (Vivo)

 **Scope:** Discuss SL LBT Failure:

 Q1: Need of SL LBT Failure indication from PHY?

 Q2: Need of consistent SL LBT failure declaration in MAC?

 Q3: How to declare consistent SL LBT failure?

 Q4: UE behaviour when MAC declares consistent LBT failure?

 Q5: Consistent SL LBT Failure detection granularity?

 **Intended outcome:** Discussion summary in R2-2210935.

**Deadline:** 10/13 10:00 (UTC), will be handled in R18 SL session.

[Ericsson]: Q1 is clear. We definitely need LBT failure indication from PHY. [OPPO]: Q5 is for SL LBT failure indication or consistent SL LBT failure? [Qualcomm, Intel, Lenovo, Ericsson, Xiaomi]: For consistent LBT failure. [Vivo]: Consistent SL LBT failure detection granularity may be same as SL LBT failure indication granularity. [Session chair]: Let’s not restrict Q5 to consistent SL LBT failure now. Leave it to email discussion rapporteur. [Ericsson]: MAC/RRC behaviour on the reception of SL LBT failure indication is too wide scope for email discussion, e.g. it can include SL DRX, SL HARQ feedbacks, resource (re)selection, etc. [Session chair]: Understand, let’s remove it now.

R2-2210935 Summary of [AT119bis-e][504][V2X/SL] Consistent SL LBT failure (vivo) Vivo discussion Rel-18 NR\_SL\_enh2

Proposal 1 (21/21): SL-specific LBT failure indication from PHY is needed for SL-specific consistent LBT failure detection in the MAC. How/whether it is used for other purposes can be further discussed.

 Proposal 2 (21/21): Support SL-specific consistent LBT failure detection and recovery procedure in the MAC for SL-U.

Proposal 3-1: Send LS to RAN1 asking the granularity of the SL-specific LBT failure indication, when received from PHY, e.g. “When an SL-specific LBT failure indication is notified for an SL transmission by the PHY, in which resource granularity the SL-specific LBT failure instance can be considered as being indicated (e.g. per Resource Pool, per RB set, per SL BWP, etc.)?”.

Proposal 3-1a: Based on the feedback from RAN1, RAN2 to further decide in which granularity the SL-specific consistent LBT failure detection is performed for SL-U.

Proposal 3-2 (15/21): RAN2 to discuss whether to make the working assumption that SL-specific consistent LBT failure detection at per cast type/per DST/per unicast link level is not supported in Rel-18 SL-U (unless the motivation/necessity can be fully justified).

[Lenovo]: For different destination or unicast connection, the experienced sidelink channel quality may be quite different also considering the different directions/locations of the peer UEs, and failure of one connection should not impact other connections.

 Proposal 4-0 (21/21): As the general principle, reuse the consistent LBT failure detection procedure in NR-U as the baseline for SL-specific consistent LBT failure detection in SL-U.

 Proposal 4-1 (21/21): As in NR-U, introduce the following parameters and variables for the SL-specific consistent LBT failure detection in SL-U as the baseline:

  An SL-specific LBT failure indication counter (e.g. SL\_LBT\_COUNTER);

  An SL-specific maximum LBT failure instance count threshold (e.g. sl-LBT-FailureInstanceMaxCount);

  An SL-specific LBT failure detection timer (e.g. sl-LBT-FailureDetectionTimer).

 Proposal 4-2 (21/21): Reuse the following MAC behaviors on TIMER/COUNTER handling in NR-U for SL-specific consistent LBT failure detection procedure in SL-U as the baseline:

  As in NR-U, if an SL-specific LBT failure indication is received from the lower layer, the SL-specific LBT failure indication counter (e.g. SL\_LBT\_COUNTER) is incremented by one.

  As in NR-U, if an SL-specific LBT failure indication is received from the lower layer, start or restart the SL-specific LBT failure detection timer (e.g. sl-LBT-FailureDetectionTimer)

  As in NR-U, if the SL-specific LBT failure indication counter value is equal to or larger than the SL-specific maximum LBT failure instance count threshold (e.g. sl-LBT-FailureInstanceMaxCount), consistent LBT failure is triggered/declared by the MAC entity.

  As in NR-U, if the SL-specific LBT failure detection timer (e.g. sl-LBT-FailureDetectionTimer) expires, the SL-specific LBT failure indication counter (e.g. SL\_LBT\_COUNTER) is reset to 0.

 As in NR-U, if the maximum LBT failure instance count threshold (e.g. sl-LBT-FailureInstanceMaxCount) or SL-specific LBT failure detection timer (e.g. sl-LBT-FailureDetectionTimer) is reconfigured, SL-specific LBT failure indication counter (e.g. SL\_LBT\_COUNTER) is reset to 0.

Proposal 5-1 (21/21): Support the mechanism that a mode-1 UE can indicate the SL-specific consistent LBT failure (if triggered and not cancelled) to the gNB. FFS whether this mechanism is also supported for a mode-2 UE in RRC\_CONNECTED.

Proposal 5-1a: For the purpose of SL-specific consistent LBT failure recovery, RAN2 may prioritize the discussion on whether/how the MAC CE based signaling can be supported to signal the SL-specific consistent LBT failure (if triggered and not cancelled) to the gNB. FFS whether RRC-based signaling is needed. FFS more details on the signaling design (e.g. content).

Proposal 5-2: RAN2 to discuss whether an autonomous SL-specific consistent LBT failure recovery mechanism is needed for a mode-2 UE in SL-U.

* [AT119bis-e][505][V2X/SL] LS on SL LBT failure indication and consistent SL LBT failure ()

 **Scope:** Inform RAN2 discussion/agreement on SL LBT failure indication and consistent SL LBT failure. Ask the corresponding questions to RAN1.

 **Intended outcome:** LS to RAN1 in R2-2210936. Email approval

**Deadline:** 10/19 10:00 (UTC)

R2-2209612 Discussion on RAN2 aspects in SL-U LG Electronics France discussion Rel-18 NR\_SL\_enh2

 Observation 11. In Release-17 Sidelink enhancement, RAN2 defined an RX UE’s behaviour to start sl-drx-HARQ-RTT-Timer when PSFCH transmission is not performed due to UL/SL prioritization. Similarly, RAN2 can support an RE UE’s behaviour of starting sl-drx-HARQ-RTT-Timer when PSFCH transmission is not performed due to SL LBT failure.

Proposal 12. sl-drx-HARQ-RTT-Timer can be started/restarted regardless of the SL LBT outcome for PSFCH transmission.

Proposal 10. RAN2 can discuss DRX operation considering shared COT as SL DRX active time.

Proposal 11. RAN2 can discuss the procedure for the TX UE to generate a COT considering the SL DRX active time of the RX UE.

Proposal 13. Based on the results of RAN1 discussion for multiple PSFCH occasions, RAN2 can discuss the DRX impacts of multiple PSFCH occasions.

R2-2209743 Discussion on the SL-U Scenarios and LBT CATT discussion Rel-18 NR\_SL\_enh2

Proposal 8: RAN2 to determine whether the optimization on SL DRX, such as to extend the SL DRX active time, could be applied in SL-U.

R2-2209385 Discussion on CAPC definition in SL-U OPPO discussion Rel-18 NR\_SL\_enh2

R2-2209386 Discussion on LBT impact in SL-U OPPO discussion Rel-18 NR\_SL\_enh2

R2-2209464 Discussion on RAN2 aspects for SL-U vivo discussion

R2-2209465 On CAPC in SL-U vivo discussion

R2-2209521 Channel Access Priority Classes for SL-U MediaTek Inc. discussion NR\_SL\_enh2

R2-2209535 Discussion on LBT for SL-U Huawei, HiSilicon discussion Rel-18 NR\_SL\_enh2

R2-2209598 Discussion on CAPC for SL-U Huawei, HiSilicon discussion Rel-18 NR\_SL\_enh2

R2-2209678 Discussion on RAN2 scope of SL-U ZTE Corporation, Sanechips discussion Rel-18 NR\_SL\_enh2

R2-2209679 Discussion on CAPC definition and consistent sidelink LBT failure handling ZTE Corporation, Sanechips discussion Rel-18 NR\_SL\_enh2

R2-2209737 On CAPC for SL-U Intel Corporation discussion Rel-18 NR\_SL\_enh2

R2-2209738 MAC related aspects for SL-U Intel Corporation discussion Rel-18 NR\_SL\_enh2

R2-2209742 Consideration on CAPC for SL-U CATT discussion Rel-18 NR\_SL\_enh2

R2-2209761 Control plane aspects of sidelink on unlicensed spectrum (SL-U) Apple discussion Rel-18 NR\_SL\_enh2

R2-2209762 User plane aspects of sidelink on unlicensed spectrum (SL-U) Apple discussion Rel-18 NR\_SL\_enh2

R2-2209891 Discussion on channel access priority for NR SL-U Lenovo discussion Rel-18 NR\_SL\_enh2-Core

R2-2209936 Discussion on LBT impact to MAC for NR SL-U Lenovo discussion Rel-18

R2-2209973 Consideration on channel access priority in SL-U Spreadtrum Communications discussion Rel-18

R2-2209996 LBT failure handling for SL-U Spreadtrum Communications discussion Rel-18

R2-2210002 Discussion on consistent LBT failure for SL-U NEC discussion Rel-18 NR\_SL\_enh2

R2-2210249 Aspects of channel access mechanisms Ericsson discussion Rel-18 NR\_SL\_enh2

R2-2210250 CAPC table and MAC multiplex rules Ericsson discussion Rel-18 NR\_SL\_enh2

R2-2210256 CAPC and COT sharing for SL Unlicensed InterDigital discussion Rel-18 NR\_SL\_enh2

R2-2210257 LBT Impacts to the MAC Layer InterDigital discussion Rel-18 NR\_SL\_enh2

R2-2210280 Discussion on sidelink CAPC Qualcomm India Pvt Ltd discussion

R2-2210281 Discussion on sidelink LBT impact Qualcomm India Pvt Ltd discussion

R2-2210342 Considerations on resource allocation for SL-U Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh2

R2-2210357 On channel access priority class and HARQ feedback Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh2

R2-2210366 Discussion on RAN2 Aspects in SL-U Fraunhofer IIS, Fraunhofer HHI discussion Rel-18 NR\_SL\_enh2

R2-2210379 Discussion on channel access for sidelink operation on unlicensed spectrum Xiaomi discussion NR\_SL\_enh2

R2-2210380 Discussion on LBT for sidelink operation on unlicensed spectrum Xiaomi discussion NR\_SL\_enh2

R2-2210486 HARQ-based Sidelink RLF due to LBT failure MediaTek Inc. discussion Rel-18

R2-2210552 SL CAPC Samsung Research America discussion Rel-18 NR\_SL\_enh2

R2-2210553 SL resource allocation Samsung Research America discussion Rel-18 NR\_SL\_enh2

R2-2210588 Discussion on sidelink un-licensed ITL discussion Rel-18