3GPP TSG-RAN WG2 Meeting #115 electronic R2-21xxxxx
Online, August 16th – 27th, 2021

Agenda Item: 10.8

Source: Session Chair (Samsung)

Title: Report from session on LTE V2X and NR SL

Document for: Approval

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

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

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

## 6.2 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: 5 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.).

### 6.2.1 General and Stage-2 corrections

Including incoming LSs, rapporteur inputs, etc.

R2-2106912 LS on RRC parameter for PSFCH RB set (R1-2106192; contact: LGE) RAN1 LS in Rel-16 5G\_V2X\_NRSL-Core To:RAN2

* Noted.

### 6.2.2 Control plane corrections

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

R2-2109024 Review report on RRC CRs Huawei, HiSilicon discussion 5G\_V2X\_NRSL-Core

Recommendation 1: Discuss the CRs in R2-2107166, R2-2107167, R2-2107437, R2-2108178, and R2-2108219 in an offline discussion, the agreed changes are merged into Rapporteur’s miscellaneous correction CR(s).

Recommendation 1: Discuss the contributions/CRs in R2-2107012, R2-2108218, and R2-2108741 separately, maybe online first.

R2-2107166 Miscelleneous CR on 38.331 Huawei, HiSilicon CR Rel-16 38.331 16.5.0 2715 - F 5G\_V2X\_NRSL-Core

R2-2107167 Miscelleneous CR on 36.331 Huawei, HiSilicon CR Rel-16 36.331 16.5.0 4690 - F 5G\_V2X\_NRSL-Core

R2-2107437 Correction on TS 38.331 from the latest RAN1 decisions ZTE Corporation, Sanechips CR Rel-16 38.331 16.5.0 2726 - F 5G\_V2X\_NRSL-Core

R2-2108178 Corrections on RRC parameter PSFCH RB set CATT CR Rel-16 38.331 16.5.0 2755 - F 5G\_V2X\_NRSL-Core

R2-2108219 CR on SL-SRB1 integrity check failure vivo, Ericsson CR Rel-16 38.331 16.5.0 2759 - F 5G\_V2X\_NRSL-Core

R2-2107012 Corrections to usage of dynamic SL grants when T310 is running Samsung Electronics Co., Ltd CR Rel-16 38.331 16.5.0 2710 - F 5G\_V2X\_NRSL-Core

R2-2108218 Discussion on SL PDCP out-of-order delivery configuration vivo discussion

R2-2108741 Correction on SL PDCP out-of-order delivery configuration vivo CR Rel-16 38.331 16.5.0 2797 - F 5G\_V2X\_NRSL-Core

### 6.2.3 User plane corrections

This agenda item may utilize a summary document on MAC (LG).

R2-2108161 Review Report on MAC CRs LG Electronics Inc. discussion Rel-16 5G\_V2X\_NRSL-Core Late

Recommendation 1 The CRs in R2-2107436, R2-2108177 can be agreed.

Recommendation 2: Discuss R2-2107168, R2-2107188, R2-2107302, and R2-2108220 during on-line sessions.

Recommendation 3: The CRs in R2-2107185, R2-2107186, R2-2107187, and R2-2108707 are not pursued.

R2-2107436 Correction on HARQ reporting on Uu ZTE Corporation, Sanechips CR Rel-16 38.321 16.5.0 1128 - F 5G\_V2X\_NRSL-Core

R2-2108177 Corrections on MCS selection when UE performing TX resource (re-)selection check CATT CR Rel-16 38.321 16.5.0 1139 - F 5G\_V2X\_NRSL-Core

R2-2107168 Corrections on the dynamic sidelink grants Huawei, HiSilicon CR Rel-16 38.321 16.5.0 1123 - F 5G\_V2X\_NRSL-Core

R2-2107188 Correction on random selection OPPO CR Rel-16 38.321 16.5.0 1126 - F 5G\_V2X\_NRSL-Core

R2-2107302 Correction on condition of setting the resource reservation interval for mode 2 Sharp, ZTE Corporation, Sanechips, OPPO CR Rel-16 38.321 16.5.0 1127 - F 5G\_V2X\_NRSL-Core

R2-2108220 Correction on SR procedure for SL-CSI reporting vivo, ZTE corporation CR Rel-16 38.321 16.5.0 1140 - F 5G\_V2X\_NRSL-Core

R2-2107185 Correction on UL-SL prioritization OPPO, Apple CR Rel-16 38.321 16.5.0 1124 - F 5G\_V2X\_NRSL-Core

R2-2107186 Correction on UL-SL prioritization OPPO, Apple CR Rel-16 36.321 16.5.0 1526 - F 5G\_V2X\_NRSL-Core

R2-2107187 Correct on priority of MAC PDU for SL-SCH OPPO CR Rel-16 38.321 16.5.0 1125 - F 5G\_V2X\_NRSL-Core

R2-2108707 Corrections for SR configuration for SL ASUSTeK CR Rel-16 38.321 16.5.0 1154 - F 5G\_V2X\_NRSL-Core

R2-2107189 Left issue on maxTransNum OPPO discussion Rel-16 5G\_V2X\_NRSL-Core

R2-2108221 Remaining issues on sl-MaxTransNum configuration and UE behaviour vivo discussion

## 8.15 NR Sidelink enhancements

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

Time budget: 1.5 TU

Tdoc Limitation: 4 tdocs

Email max expectation: 6 threads

The LS from SA2 in R2-2106967 (S2-2104932) that addresses a mix of sidelink relay and sidelink enhancement topics will initially be handled under the NR SL relay AI.

### 8.15.1 Organizational

Including incoming LSs, rapporteur inputs, etc.

R2-2108496 Stage 2 Running CR of TS 38.300 for eSL InterDigital France R&D, SAS discussion Rel-17 Late

* Noted.
* [AT115-e][701][V2X/SL] 38.300 running CR (InterDigital)

 **Scope:** Capture agreements into 38.300 running CR

 **Intended outcome:** Endorse 38.300 running CR in R2-2108981

 **Deadline:** 8/24 10:00am UTC? Short email discussion?

### 8.15.2 SL DRX

Including [Post114-e][704], [Post114-e][705], and [Post114-e][706].

R2-2107303 Summary of [POST114-e][704][V2X/SL] How to make sure Rel-16 UEs not supporting SL DRX are not involved in SL communication in DRX manner (Sharp) SHARP Corporation discussion NR\_SL\_enh-Core Late

Proposal 1: TX profile is introduced in Rel-17 for sidelink enhancement. FFS whether a TX profile identifies a Release, or one or more sidelink features, or one or more sidelink feature groups.

Proposal 2a: A service type can be mapped to a TX profile. A service type here denotes “V2X service type” for V2X and “application-ID/Application-layer-group-ID” for ProSe.

Proposal 2b: A TX profile is indicated from upper layer to AS layer for each service type. If no TX profile is indicated, a default TX profile is used.

Proposal 3: Multiple TX profiles can be defined/configured/preconfigured.

Proposal 5: It is supported that some TX profile(s) correspond to support of SL DRX, and other TX profile(s) correspond to no support of SL DRX.

Proposal 8: A Rel-17 TX UE shall only apply SL DRX for a service type with an associated TX profile corresponding to support of SL DRX.

Proposal 9: For unicast, for SL transmissions after PC5-RRC link is established, no further discussion on backward compatibility issue of SL DRX.

Proposal 11a: Send an LS to SA2 to inform them of the RAN2 agreements related to TX profile.

R2-2107159 Summary of [POST114-e][705][V2XSL] Discussion on remaining FFSs and open issues in Uu DRX timer Huawei, HiSilicon discussion

Proposal 1: When sl-PUCCH-Config is configured but the PUCCH is not transmitted due to UL/SL prioritization, the TX UE should start the SL-specific drx-HARQ-RTT-Timer in Uu for the corresponding SL HARQ process in the first slot after the end of the corresponding PUCCH resource.

Proposal 2: When sl-PUCCH-Config is not configured, the SL-specific drx-HARQ-RTT-Timer should not be supported.

Proposal 3: When sl-PUCCH-Config is not configured, the SL-specific drx-RetransmissionTimer should be supported.

Proposal 4: If RAN2 agrees not to support SL-specific drx-HARQ-RTT-Timer but to support SL-specific drx-RetransmissionTimer when sl-PUCCH-Config is not configured, when sl-PSFCH-Config is configured and the data of the corresponding HARQ process was not successfully transmitted in sidelink, the SL-specific drx-RetransmissionTimer is started at the first symbol after the end of last PSSCH resource scheduled through one DCI. FFS the SL-specific drx-RetransmissionTimer is started at the first slot after the end of last PSSCH resource scheduled through one DCI instead.

Proposal 5: If RAN2 agrees not to support SL-specific drx-HARQ-RTT-Timer but to support SL-specific drx-RetransmissionTimer when sl-PUCCH-Config is not configured, when sl-PSFCH-Config is not configured and the data of the corresponding HARQ process was not successfully transmitted in sidelink, the SL-specific drx-RetransmissionTimer is started at the first symbol after the end of last PSSCH resource scheduled through one DCI. FFS the SL-specific drx-RetransmissionTimer is started at the first slot after the end of last PSSCH resource scheduled through one DCI instead.

R2-2107268 Summary of [POST114-e][706][V2X/SL] Discussion on remaining FFSs/open issues in SL DRX timer maintenance (InterDigital) InterDigital discussion Rel-17 NR\_SL\_enh-Core

Proposal 2 – RAN2 further discuss whether inactivity timer is (pre)configured per QoS profile for unicast in IDLE/INACTIVE or OOC case [6/14].

Proposal 3 – In Groupcast, the RX UE maintains a separate inactivity timer for each L2 Destination ID [14/14]

Proposal 4 – SL inactivity timer can be supported for all scenarios of groupcast [10/14]

Proposal 5 – RAN2 discuss whether stopping the inactivity timer to handle L1/L2 mismatch is not supported. [8/13]

Proposal 6 – Specifying mechanisms to use HARQ feedback to handle Inactivity timer mismatch between TX and RX UE (for unicast and groupcast) is not considered in this release. [14/14]

Proposal 7 – Restarting the Inactivity timer at the TX UE upon transmission of an SCI indicating a retransmission is not needed. [14/14]

Proposal 8 – Inactivity timer can be used for unicast whether HARQ feedback is enabled or disabled. [14/14]

Proposal 9 – For groupcast, the TX UE restarts its timer corresponding to inactivity timer for the L2 destination ID (used for determining the allowable transmission time) upon reception of new data. [13/14]

Proposal 10 –HARQ RTT is supported for both HARQ enabled and HARQ disabled cases by allowing HARQ RTT timer to be set to different values. FFS on the specific values that can be used for HARQ disabled case. [11/15]

Proposal 11 – For cases where there is no uncertainty in the timing of a retransmission for a HARQ process the RX UE uses a retransmission timer [13/15].

Proposal 12 – For unicast and groupcast, when there is no uncertainty in the timing of a retransmission for a HARQ process, a configured retransmission timer is used [10/14].

Proposal 13 –SL HARQ RTT timer and SL Retransmission timer are not used for broadcast transmissions [13/15].

Proposal 14 – The SL active time of the RX UE includes the slots associated with announced periodic transmissions by the TX UE (as per SCI) [9/15].

Proposal 15 – When data is available for transmission to one or more RX UE in DRX, the MAC layer at the TX UE selects the resources taking into account the active time (current or future) of the RX UE(s) determined by the timers maintained at the TX UE. Details are FFS. It is upto RAN1 to discuss which candidate resources the physical layer will provide to the MAC layer in order to support the principle agreed by RAN2.. [14/15].

Proposal 16 – For unicast and groupcast, the TX UE selects the resources for the initial transmission associated with the time in which the on duration timer or inactivity timer, or retransmission timer at the RX UE are running. How to handle cases when a transmission may cause these timers to be running at the RX UE is FFS.[10/15].

Proposal 17 – For unicast and groupcast, the TX UE can select the resources for the retransmission associated with the time in which the on duration timer or inactivity timer, or retransmission timer at the RX UE are running. How to handle cases when a transmission may cause these timers to be running at the RX UE is FFS. [14/15].

Proposal 18 – For broadcast, the TX UE can select the resources for the initial transmission associated with the time in which the on duration timer at the RX UE is running. [14/15].

Proposal 19 – For broadcast, the TX UE can select the resources for the retransmission associated with the time in which the on duration timer at the RX UE is running. [10/15].

* [AT115-e][702][V2X/SL] SL DRX configuration for UC

 **Scope:** Discuss following FFS/TBD/open issues:

Q1: Any specification impact to set SL DRX inactivity timer value with QoS consideration?

 Q2: Is pre-configuration needed to determine SL DRX configuration for UC?

 Q3: Need of SL DRX assistance information REQ from TX UE to RX UE?

 Q4: What information is included in the assistance information from RX UE to TX UE?

 Q5: When RX UE sends SL DRX assistance information to TX UE?

 Q6: Is RX UE’s SL DRX configuration failure/reject to TX UE’s SL DRX configuration needed?

 **Intended outcome:** Discussion summary in R2-2108982

 **Deadline:** 8/24 10:00am UTC

* [AT115-e][703][V2X/SL] SL DRX configuration for GC/BC

 **Scope:** Discuss following FFS/TBD/open issues:

Q1: Whether the dedicated RRC is also used to configure SL DRX configuration for GC/BC?

 Q2: How to configure SL DRX on-duration and inactivity timers for GC/BC?

 Q3: How to configure SL DRX RTT and retransmission timers for GC/BC?

 Q4: Need of down-select other DRX configurations for a specific L2 DST ID if the UE has multiple QoS profiles for same DST L2 ID? If needed, how to do down-selection?

 Q5: Need to define default DRX configuration for GC/BC?

 Q6: Need for SL DRX MAC CE for GC/BC?

 **Intended outcome:** Discussion summary in R2-2108983

 **Deadline:** 8/24 10:00am UTC

* [AT115-e][704][V2X/SL] Others

 **Scope:** Discuss following FFS/TBD/open issues:

Q1: What’s RX UE behaviour on the reception of SL DRX MAC CE?

 Q2: Need to define when TX UE sends SL DRX MAC CE?

 Q3: When to configure SL DRX configuration for UC and GC/BC?

 Q4: How to handle DCR and other messages before SL DRX configuration is configured?

 **Intended outcome:** Discussion summary in R2-2108984

 **Deadline:** 8/24 10:00am UTC

R2-2106985 Leftover Issues for Sidelink Unicast DRX CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2106986 Leftover Issues for Sidelink Groupcast and Broadcast DRX CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2106987 Further Issues Regarding to the Tx Profile CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2106988 Impacts of SL DRX on Other Procedures CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2107041 Discussion on left issue from [704][705][706] OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2107151 NR SL DRX Fraunhofer IIS, Fraunhofer HHI discussion Rel-17

R2-2107155 Consideration on sidelink DRX for groupcast and broadcast Huawei, HiSilicon discussion Rel-17 NR\_SL\_enh-Core

R2-2107156 Remaining issues on the sidelink DRX for unicast Huawei, HiSilicon discussion Rel-17 NR\_SL\_enh-Core

R2-2107157 Discussion on SL communication impact on Uu DRX Huawei, HiSilicon discussion Rel-17 NR\_SL\_enh-Core

R2-2107190 Left issues on SL-DRX OPPO discussion Rel-17 NR\_SL\_enh-Core

=> Revised in R2-2108830

R2-2108830 Left issues on SL-DRX OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2107191 Discussion on SL-DRX impact to mode-1 scheduling OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2107238 Leftover issues on overall flow of unicast TX-UE centric mechanism NEC Corporation discussion

R2-2107239 Discussion on DRX suspend/resume mechanism NEC Corporation discussion

R2-2107242 Further discussion on Uu/SL DRX timer LG Electronics France discussion Rel-17 NR\_SL\_enh-Core

R2-2107269 Resource Allocation Considering DRX InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2107270 Open Issues on SL DRX Timers InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2107271 DRX Configuration Determination in Unicast InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2107310 On SL DRX Configuration aspects Intel Corporation discussion Rel-17 NR\_SL\_relay-Core

R2-2107311 Discussion on SL DRX Timers Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2107312 On DRX wake-up time alignment Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2107355 Remaining issues on DRX Timers for SL Unicast Spreadtrum Communications discussion Rel-17

R2-2107432 Consideration on Backward compatibility for SL DRX ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2107433 Further consideration on DRX configuration ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2107434 Discussion on SL DRX timer ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2107472 Remaining aspects of SL DRX Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2107474 Handling coexistence between UEs supporting different releases Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2107626 Discussion on remaining issues of SL DRX configurations Apple discussion Rel-17 NR\_SL\_enh-Core

R2-2107627 Discussion on remaining issues of SL impact of Uu-DRX Apple discussion Rel-17 NR\_SL\_enh-Core

R2-2107653 Remaining details on HARQ RTT and Retransmission Timer for SL DRX Fujitsu discussion Rel-17 NR\_SL\_enh-Core R2-2105400

R2-2107654 SL DRX impact on LCP Fujitsu discussion Rel-17 NR\_SL\_enh-Core R2-2105401

R2-2107968 DRX impact on Uu Xiaomi communications discussion

R2-2107969 Discussion on Sidelink DRX for unicast Xiaomi communications discussion

R2-2107970 Discussion on Sidelink DRX for broadcast and groupcast Xiaomi communications discussion

R2-2108014 DRX Configuration for UC BC GC and its interaction with Sensing Lenovo Mobile Com. Technology discussion NR\_SL\_enh-Core

R2-2108016 DRX coordination between Uu and SL Lenovo Mobile Com. Technology discussion NR\_SL\_enh-Core

R2-2108072 Proposals for Sidelink DRX Sony discussion Rel-17 NR\_SL\_enh-Core

R2-2108151 Consideration on TX centric SL DRX configuration and alignment LG Electronics Inc. discussion Rel-17 NR\_SL\_enh-Core

R2-2108214 Discussion on Compatible Issues with Rel 16 UEs Qualcomm Finland RFFE Oy discussion

R2-2108215 Discussion on RLF and PC5 RRC Connection with SL DRX Qualcomm Finland RFFE Oy discussion

R2-2108217 Discussion on Remaining Issues Qualcomm Finland RFFE Oy discussion

R2-2108222 A Default PC5 DRX Configuration for Broadcast/Groupcast/Unicast vivo discussion

R2-2108223 DRX duration calculation vivo, Xiaomi, ZTE corporation discussion

R2-2108224 Remaining issues on SL DRX for unicast/groupcast/broadcast vivo discussion

R2-2108426 Discussion on TBD/FFS Samsung Research America discussion

R2-2108427 Further consideration for SL DRX operation in groupcast Samsung Research America discussion

R2-2108428 Further consideration for SL DRX and Uu DRX alignments Samsung Research America discussion

R2-2108469 Discussion on alignment of mode 1 RA of Tx UE and SL DRX of Rx UE Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh-Core

R2-2108470 Further Issues on Sidelink Traffic Pattern for SL DRX Configuration Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SL\_enh-Core R2-2105958

R2-2108471 SL DRX for SL groupcast Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh-Core

R2-2108765 SL DRX enabled UE Mode 2 operation ITL discussion Rel-17

R2-2108822 Remaining issues of SL DRX MediaTek Inc. discussion Rel-17 NR\_SL\_enh-Core

### 8.15.3 Resource allocation enhancements RAN2 scope

R2-2107042 Discussion on resource allocation enhancement OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2107158 Consideration on resource allocation enhancements Huawei, HiSilicon discussion Rel-17 NR\_SL\_enh-Core

R2-2107181 Power Reduction for Sidelink Mode 2 Resource Allocation Fraunhofer IIS, Fraunhofer HHI discussion

R2-2107182 Inter-UE Coordination for Sidelink Mode 2 Resource Allocation Fraunhofer IIS, Fraunhofer HHI discussion R2-2105499

R2-2107240 Discussion on inter-UE coordination for sidelink mode 2 resource allocation NEC Corporation discussion

R2-2107272 RAN2 Aspects of Inter-UE Coordination InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2107368 Discussion on resource allocation enhancement for NR sidelink Spreadtrum Communications discussion Rel-17

R2-2107435 Discussion on inter-UE coordination ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2107628 Discussion on Inter-UE Coordination Apple discussion Rel-17 NR\_SL\_enh-Core

R2-2107629 NR SL Resource allocations for Pedestrian UEs Apple discussion Rel-17 NR\_SL\_enh-Core

R2-2107918 Discussion on sidelink resource allocation enhancements Lenovo, Motorola Mobility discussion Rel-17

R2-2107971 Resource allocation enhancement impact in RAN2 Xiaomi communications discussion

R2-2108073 Discusison on Sidelink sensing Sony discussion Rel-17 NR\_SL\_enh-Core

R2-2108118 Power efficient resource allocation and Inter-UE coordination LG Electronics France discussion Rel-17 NR\_SL\_enh-Core

R2-2108191 General principles for resource allocation enhancements for SL mode 2 Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2108225 Discussion on inter-UE coordination for sidelink mode2 vivo discussion

R2-2108295 Resource Allocation Enhancements for Reduced Power Consumption and Enhanced Reliability Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2108429 Initial discussion on enhanced resource allocation Samsung Research America discussion

R2-2108472 Reduced monitoring of SL resource pools for power saving Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh-Core

R2-2108752 On Resource Allocation Mode 2 Enhancement for NR Sidelink Convida Wireless discussion Rel-17 R2-2106358

### 8.15.4 Other

R2-2107473 Interaction between partial sensing and DRX Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2107917 Discussion on backward compatible issue of SL DRX Lenovo, Motorola Mobility discussion Rel-17

R2-2108823 SL sync search optimization MediaTek Inc. discussion Rel-17 NR\_SL\_enh-Core R2-2106441