3GPP TSG-RAN WG2 Meeting #116bis-e electronic R2-21xxxxx
Online, January 17 – 25, 2022

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.

## 8.15 NR Sidelink enhancements

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

Time budget: 1.5 TU

Tdoc Limitation: 3 tdocs

Email max expectation: 6 threads

### 8.15.1 Organizational

Including incoming LSs, rapporteur inputs, etc.

R2-2200265 Running CR of TS 38.304 for eSL ZTE Corporation, Sanechips draftCR Rel-17 38.304 16.7.0 NR\_SL\_enh-Core

R2-2200482 RRC running CR for NR Sidelink enhancements Huawei, HiSilicon draftCR Rel-17 38.331 16.7.0 F NR\_SL\_enh-Core

R2-2200550 Running CR of TS 38.321 for Sidelink enhancement LG Electronics France draftCR Rel-17 38.321 16.7.0 NR\_SL\_enh-Core

### 8.15.2 SL DRX

Including [Post116-e][715], [Post116-e][716], [Post116-e][718], etc.

R2-2200007 Summary of [POST116-e][718][V2X SL] SL DRX configuration (Ericsson) Ericsson discussion

Easy Proposals for Block Approval

Proposal 1 (19/19) For unicast and TX UE in RRC CONNECTED and Mode 1 RA, the serving gNB of TX UE determines the SL DRX configurations for RX UE

Proposal 3 (19/19) For unicast and TX UE in RRC CONNECTD, it is up to TX UE’s gNB implementation to determine alignment between Uu DRX of TX UE and SL DRX of RX UE, i.e., no spec change is foreseen.

Proposal 4 (19/19) For unicast and RX UE in RRC CONNECTED, RX UE uses an existing Uu RRC signalling to report a received SL DRX configuration to the gNB. Which RRC signalling to use will rely on outcome of the email discussion 715.

Proposal 5 (18/19) For unicast and RX UE in RRC CONNECTED, it is up to RX UE to indicate either acceptance or rejection to TX UE for a received SL DRX configuration.

Proposal 9 (19/19) For groupcast or broadcast, it is up to the gNB implementation to provide proper Uu DRX configuration to TX UE or RX UE, i.e., no spec change is foreseen.

Proposal 2 (16/18) For unicast and TX UE in RRC CONNECTED and Mode 2 RA, same as for Mode 1 scheduling, TX UE’s gNB determines SL DRX for RX UE

Proposals for Online discussion

Proposal 7 (15/19) For groupcast or broadcast, the existing information content in the existing RRC signaling (e.g., SidelinkUEInformationNR) is reused by TX UE if in RRC CONNECTED to report assistance information to the gNB in order to achieve alignment of Uu DRX of TX UE and SL DRX of RX UE. FFS on additional information.

Proposal 8 For groupcast or broadcast, RAN2 to discuss whether RX UE if in RRC CONNECTED can report SL DRX configurations associated with its interested services to the gNB in order to achieve alignment of Uu DRX of RX UE and SL DRX of RX UE [7/19] or not [10/19].

R2-2200045 Summary of [POST116-e][715][V2X/SL] RRC open issues Huawei, HiSilicon (Rapporteur) discussion

[Proposal 1]: UE uses SUI to report sidelink DRX configuration or sidelink assistance information to its serving gNB. (14/18)

[Proposal 2]: UE reports sidelink DRX configuration to its serving gNB, upon receiving sidelink DRX configuration information from the peer UE. FFS the reporting is after UE accepting the received sidelink DRX configuration.

[Proposal 3]: UE reports sidelink assistance information to its serving gNB, upon receiving sidelink DRX assistance information from the peer UE. (16/16)

[Proposal 4]: For IDLE/INACTIVE/OOC UE, It is up to TX UE implementation to set sl-DRX-ConfigUC-PC5. (18/18)

[Proposal 5]: Remove the EN in clause 5.8.9.X.3 of running CR and update the description as “For sidelink unicast, when a UE in IDLE/INACTIVE or OOC has obtained this assistance information from its peer UE, it may derive the values for SL DRX based on UE implementation.” (17/18)

[Proposal 6] Use an extension marker for SL-PHY-MAC-RLC-Config-v17xy. (15/17)

R2-2200051 Summary of [POST116-e][716][SL] MAC open issues LG Electronics Inc. (Rapporteur) discussion

(15/19) Proposal 1: The priority order of Sidelink DRX Command MAC CE is between Sidelink CSI Reporting MAC CE and data from any STCH.

(19/19) Proposal 2: When an Rx UE receives SL DRX command MAC CE from a TX UE, the Rx UE can stop the running onduration timer and inactivity timer associated with a unicast link.

(19/19) Proposal 3: For the same pair of L2 SRC/DST ID, the SL DRX command MAC CE can be transmitted alone or with data in the MAC PDU.

(19/19) Proposal 4: When a MAC PDU carrying only the SL DRX Command MAC CE is transmitted, it is transmitted as a HARQ Feedback disabled MAC PDU.

(19/19) Proposal 5: RAN2 does not define a separate SR configuration for SL DRX Command MAC CE.

(11/19) Proposal 6: RAN2 should discuss that drx-HARQ-RTT-TimerSL is supported in case PSFCH is configured in resource pool and sl-PUCCH-Config is not configured.

(19/19) Proposal 7: UE uses configured sl-drx-HARQ-RTT-Timer value when the resource assignment information for the next re-transmission does not exist in the SCI regardless of whether HARQ feedback is enabled or disabled.

(10/18) Proposal 8: RAN2 should further discuss that when mode 1 SL grant is not in SL active time of any destination that has data to be sent, for initial transmission and the mode 1 grant is dropped, UE sends ACK to gNB.

(9/18) Proposal 9: RAN2 should further discuss that when mode 1 SL grant is not in SL active time of any destination that has data to be sent, for retransmission and the mode 1 grant is dropped, UE sends NACK to gNB.

(10/18) Proposal 10: RAN2 should further discuss that slots associated with the announced periodic transmissions by the TX UE are considered as SL active time of the RX UE.

(16/19) Proposal 11: (Under the assumption that RAN2 confirms the WA of down-selection of drx cycle) TX/RX UE determines the DRX cycle applied for groupcast/broadcast transmissions associated with a specific L2 destination ID as the minimum DRX cycle configured for any of the QoS profiles associated with that L2 destination ID.

Proposal 12: RAN2 should choose between the two options below for down-selection of onduration timer.

- Option 1 (9/19). TX/RX UE determines the onduration timer applied for groupcast/broadcast transmissions associated with a specific L2 destination ID as the maximum on duration timer configured for any of the QoS profiles associated with that L2 destination ID

- Option 2 (8/19). TX/RX UE selects the length of the on-duration timer associated with the same QoS profile of selected DRX cycle.

Proposal 13: RAN2 should further discuss whether / how to define UE behavior in case of MAC PDU decoding failure (i.e., only L1 DST ID is available).

 (19/19) Proposal 14: Tx UE should select a destination associated with an Rx UE that is in SL active time for the SL transmission occasion in SL LCP.

(14/18) Proposal 15: RAN2 should further discuss that the determination of RX UE's active time provided by the MAC layer to the physical layer is up to UE implementation.

Proposal 16: RAN2 should further discuss the options below for the Tx UE’s behaviour to select an initial transmission resource for single MAC PDU transmission.

a) (9/19)For initial transmission for single MAC PDU, the TX UE can select TX resource within RX UE’s active time where SL DRX timers are running now.

b) (9/19) For initial transmission for single MAC PDU, the TX UE can select TX resource within RX UE’s active time where on duration timer will be running in future.

c) (6/19) For initial transmission for single MAC PDU, the TX UE can select TX resource within RX UE’s active time where inactivity timer will be running in future.

d) (2/19) For initial transmission for single MAC PDU, the TX UE can select TX resource within RX UE’s active time where retransmission timer will be running in future.

e) (6/19) select resources according to the existing procedure in the MAC

Proposal 17: RAN2 should further discuss the options below for the Tx UE’s behaviour to select a retransmission resource for single MAC PDU transmission.

a) (9/19) For retransmission for single MAC PDU, the TX UE can select TX resources within RX UE’s active time where SL DRX timers are running now.

b) (9/19) For retransmission for single MAC PDU, the TX UE can select TX resources within RX UE’s active time where on duration timer will be running in future.

c) (9/19) For retransmission for single MAC PDU, the TX UE can select TX resources within RX UE’s active time where inactivity timer will be running in future.

d) (8/19) For retransmission for single MAC PDU, the TX UE can select TX resources within RX UE’s active time where retransmission timer will be running in future.

e) (6/19) select resources according to the existing procedure in the MAC.

Proposal 18: RAN2 recommends revisiting resource selection behaviour for multiple MAC PDUS after proposal 10 is decided since the resource selection behavior for transmitting multiple MAC PDUs is tightly coupled to proposal 10.

(11/17) Proposal 19: RAN2 confirms that drx-RetransmissionTimerSL is started after expiring drx-HARQ-RTT-TimerSL when the PUCCH (NACK) transmission is dropped.

(12/17) Proposal 20: RAN2 confirms that #113-e meeting's agreement below does not apply to GC NACK only.

“If the RX UE does not transmit PSFCH for a HARQ enabled transmission (e.g. due to UL/SL prioritization or ACK) the RX UE still starts the HARQ RTT timer in the symbol/slot following the end of PSFCH resource.”

(14/18) Proposal 21: sl-drx-RetransmissionTimer is not started if PSFCH (NACK) transmission is dropped (due to UL/SL prioritization) in GC NACK only. Whether or not to start the sl-drx-HARQ-RTT-Timer if PSFCH (NACK) transmission is dropped in GC NACK only is FFS.

(8/15) Proposal 22: For unicast, sl-drx-RetransmissionTimer is started after expiring sl-drx-HARQ-RTT-Timer when the PSFCH (NACK) transmission is dropped.

(9/19) Proposal 23: RAN2 confirms following option to determine the sl-drx-startoffset.

- sl-drx-StartOffset (ms) = DST L2 ID MOD sl-drx-Cycle (ms)

R2-2200318 Leftover Issues for Sidelink Unicast DRX CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2200264 Discussion on remaining issues of SL DRX ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2200319 Leftover issues for Sidelink GCBC DRX CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2200344 Further discussions on leftover issues of sidelink DRX configuration NEC Corporation discussion

R2-2200345 Further discussions on sidelink MAC open issues NEC Corporation discussion

R2-2200373 Discussion on DRX left issues OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2200374 Discussion on DRX left issues from [716] [718] OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2200415 SL DRX CP aspects Lenovo, Motorola Mobility discussion NR\_SL\_enh-Core Revised

R2-2200483 Remaining issues for sidelink DRX Huawei, HiSilicon discussion Rel-17 NR\_SL\_enh-Core

R2-2200484 Remaining issues of SL communication impact on Uu DRX Huawei, HiSilicon discussion Rel-17 NR\_SL\_enh-Core

R2-2200528 Leftover aspects on SL DRX Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2200530 On SL DRX and candidate resource selection Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2200535 Discussion on remaining issues for SL DRX LG Electronics France discussion Rel-17 NR\_SL\_enh-Core

R2-2200536 Consideration on sidelink DRX for unicast LG Electronics France discussion Rel-17 NR\_SL\_enh-Core Withdrawn

R2-2200544 Consideration on sidelink DRX for unicast LG Electronics France discussion Rel-17

R2-2200545 Discussion on resource (re-)selection in SL DRX SHARP Corporation discussion NR\_SL\_enh-Core

R2-2200749 Discussion on remaining issues regarding Sidelink DRX ASUSTeK discussion Rel-17 NR\_SL\_enh-Core

R2-2200762 Remaining MAC issues for SL DRX Lenovo, Motorola Mobility discussion Rel-17

R2-2200786 NR Sidelink Synchronization Reference Search Optimization at UE for Power Saving Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh-Core

R2-2200790 Discussion on Uu impact Xiaomi discussion

R2-2200791 Discussion on Sidelink DRX open issues Xiaomi discussion

R2-2200893 RRC remaining issues on SL DRX vivo discussion Rel-17

R2-2200894 MAC remaining issues on SL DRX vivo discussion Rel-17

R2-2200938 Remaining aspects of SL DRX Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2201061 Discussion on remaining issues of SL DRX timers ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2201135 Discussion on remaining issues on SL-DRX Apple discussion Rel-17 NR\_SL\_enh-Core

R2-2201150 Resource Selection Considering DRX InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2201151 Consideration of the Active Time for Periodic Transmissions InterDigital, Ericsson, ZTE, AsusTek, Huawei, HiSilicon, Lenovo, Motorola Mobility, Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SL\_enh-Core

=> Revised in R2-2201635

R2-2201635 Consideration of the Active Time for Periodic Transmissions InterDigital, Ericsson, ZTE, AsusTek, Huawei, HiSilicon, Lenovo, Motorola Mobility, Nokia, Nokia Shanghai Bell, Samsung discussion Rel-17 NR\_SL\_enh-Core

R2-2201152 Remaining Aspects on SL DRX InterDigital discussion Rel-17 NR\_SL\_enh-Core

R2-2201458 SL data transmission considering SL DRX active time Nokia, Nokia Shanghai Bell discussion NR\_SL\_enh-Core R2-2110747

R2-2201478 Resource selection considering SL DRX ITL discussion

R2-2201523 SL DRX CP aspects Lenovo, Motorola Mobility discussion NR\_SL\_enh-Core R2-2200415

R2-2201582 UE report on SL DRX for Uu DRX alignment Samsung Research America discussion

R2-2201585 Remaining details for GC/BC Samsung Research America discussion

R2-2201624 Discussion on Remaining Design Aspects for SL DRX Qualcomm Finland RFFE Oy discussion

### 8.15.3 Resource allocation enhancements RAN2 scope

Including RAN2 discussion scope on random selection, partial sensing and inter-UE coordination. This agenda item may utilize a summary document (TBD).

R2-2200263 Discussion on inter-UE coordination ZTE Corporation, Sanechips discussion Rel-17 NR\_SL\_enh-Core

R2-2200317 Consideration on Resource Allocation Enhancements CATT discussion Rel-17 NR\_SL\_enh-Core

R2-2200349 Discussion on candidate resource selection with DRX and inter-UE coordination NEC Corporation discussion

R2-2200375 Discussion on resource allocation enhancement OPPO discussion Rel-17 NR\_SL\_enh-Core

R2-2200379 RAN2 aspects on resource allocation enhancements for Rel-17 eSL vivo discussion

R2-2200485 Consideration on resource allocation enhancement Huawei, HiSilicon discussion Rel-17 NR\_SL\_enh-Core

R2-2200529 On resource allocation and inter-UE coordination Intel Corporation discussion Rel-17 NR\_SL\_enh-Core

R2-2200537 Discussion on Inter-UE Coondination MAC CE LG Electronics France discussion Rel-17 NR\_SL\_enh-Core

R2-2200642 Discussion on resource allocation enhancement for NR sidelink Spreadtrum Communications discussion Rel-17

R2-2200750 Discussion on inter-UE coordination ASUSTeK discussion Rel-17 NR\_SL\_enh-Core

R2-2200763 RAN2 impacts on SL Resource allocation enhancements Lenovo, Motorola Mobility discussion Rel-17

R2-2200792 Discussion on inter-UE coordination impact in RAN2 Xiaomi discussion

R2-2200799 On Signalling for Inter UE Coordination Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_SL\_enh-Core

R2-2200939 MAC CE design of inter-UE coordination Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2201134 Discussion on Inter-UE Coordination Apple discussion Rel-17 NR\_SL\_enh-Core

R2-2201457 Power Reduction for Sidelink Mode 2 Resource Allocation Fraunhofer IIS, Fraunhofer HHI discussion Rel-17

R2-2201459 Inter-UE Coordination for Sidelink Mode 2 Resource Allocation Fraunhofer IIS, Fraunhofer HHI discussion Rel-17

R2-2201479 Interaction between partial sensing and DRX Ericsson discussion Rel-17 NR\_SL\_enh-Core

R2-2201591 Resource allocation enhancements Samsung Research America discussion

R2-2201625 Discussion on Inter-UE Coordination Qualcomm Finland RFFE Oy discussion