



Agenda Item: 5
Source: Xiaomi
Document for: Discussion

Views on sidelink evolution in Rel-19

Xiaomi

Background & Motivation



- In Rel-18
 - The following SL enhancements are specified
 - SL operation in FR1 unlicensed spectrum
 - Dynamic resource sharing between LTE Sidelink and NR sidelink
 - NR SL CA in ITS spectrum
 - And SL enhancement in FR2 spectrum is only studied in Rel-18
- In Rel-19, SL evolution shall continue on
 - Throughput & reliability enhancement to support high throughput commercial & V2X services
 - More flexible deployment to enable new business possibilities for commercial services
 - Further cost reduction and power saving to enable low cost low power devices

R19 - SL CA



■ Background

- In R18 SL CA is only limited to ITS intra-band with same SCS (from RAN#99 meeting decision)

■ Potential Rel-19 CA enhancement

- Inter-band CA including FR1 + FR2
 - A pair of UEs can build unicast connection in FR1, and performs beam management in FR2
 - to achieve both coverage and throughput performance
- CA support for NR SL specific enhancement, including
 - Cross-carrier SL HARQ-ACK/CSI feedback
 - Cross-carrier inter-UE coordination
 - New PSFCH format to support more than 1 bit feedback
- SL for Redcap UEs
 - SL Redcap UE and SL normal UE can coexist in the same carrier with different SL BWP
 - Multiple SL BWPs and BWP switching for a UE in a single carrier

R19 - SL FR2



- SL beam management for unicast shall be specified based on the R18 study conclusions
- The impact of beam management on SL resource allocation and SL sensing and potential enhancement shall be evaluated
- SL operation in FR2-2
 - 480KHz/960KHz SCS SL operations considering R17 71GHz WI as the baseline
 - Beam based SL operation for shared spectrum operation, including both directional LBT and no-LBT channel access
 - More flexible starting position in a slot to adapt to the large bandwidth

R19 – Power saving



■ SL DRX enhancement

● Short DRX cycle for unicast

— Only long DRX cycle is supported for unicast in R17. Introduction of short DRX cycle can improve the power saving gain.

● Retransmission timer enhancement

— It's agreed the DRX timer is calculated based on physical slot. However, the sidelink resource may not always available in all physical slots. RTX timer may be triggered on any slots and may be running on slots without SL RX resource allocation. No subsequent RTX timer would be triggered in such case. UE has to wait for next on-duration time, which may result in delay or data loss if the delay budget is not fulfilled.

Conclusion



- Proposal 1: Study/specify enhancement to support SL beam based operations in FR2 licensed and unlicensed spectrum, including
 - Beam management mechanism based on R18 study
 - Necessary enhancement on PHY layer structure and resource allocation mechanism
 - Support of SL operation on FR2 unlicensed spectrum for both mode 1 and mode 2
- Proposal 2: Study/specify mechanism to support NR sidelink CA operation including licensed, unlicensed and ITS spectrum in both FR1 and FR2
 - Necessary enhancement on SL HARQ, IUC, and CSI mechanism with SL CA support
 - Support multiple BWP operations and BWP switch in a carrier
- Proposal 3: Specify mechanism to enhance SL DRX
 - Support SL DRX in sparse resource allocation
 - Short DRX cycle for unicast

Annex



■ RTX timer running on slots without sidelink resource

