**3GPP TSG-RAN WG2 Meeting #124 R2-231xxxx**

**Chicago, USA, November 13-17, 2023**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **38.300** | **CR** | 0728 | **rev** | 1 | **Current version:** | **17.6.0** |  |
|  |
| *For* [***HELP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network | **x** | Core Network |  |

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|  |
| ***Title:***  | Introduction of NR Sidelink Evolution |
|  |  |
| ***Source to WG:*** | InterDigital |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_SL\_enh2 |  | ***Date:*** | 2023-11-01 |
|  |  |  |  |  |
| ***Category:*** | ***B*** |  | ***Release:*** | Rel-18 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | This CR introduces the support of Rel18 features for sidelink |
|  |  |
| ***Summary of change:*** | Modified section 5.7.4.1 to indicate non-support of NACK only groupcast for SL-U.Include new section for SL in unlicensedInclude new section for SL CA |
|  |  |
| ***Consequences if not approved:*** | Rel18 features for sidelink are not supported |
|  |  |
| ***Clauses affected:*** | 5.7.4.1, 16.9.x (new), 16.9.y (new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 38.321 CR 1695 |
| ***affected:*** |  | **x** |  Test specifications | TS 38.331 CR 4391  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS 38.323 CR 0126TS 38.306 - |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

*First Modified Subclause*

### 5.7.4 Physical layer procedures for sidelink

#### 5.7.4.1 HARQ feedback

Sidelink HARQ feedback uses PSFCH and can be operated in one of two options. In one option, which can be configured for unicast and groupcast, PSFCH transmits either ACK or NACK using a resource dedicated to a single PSFCH transmitting UE. In another option, which can be configured for groupcast, PSFCH transmits NACK, or no PSFCH signal is transmitted, on a resource that can be shared by multiple PSFCH transmitting UEs. The option of transmitted NACK or no PSFCH signal is not supported for sidelink in unlicensed spectrum.

*Next Modified Subclause (new)*

### 16.9.x Sidelink in Unlicensed Spectrum (SL-U)

#### 16.9.x.1 Overview

Sidelink supports operation in unlicensed spectrum for both mode 1 and mode 2. Type1 and Type2 (2A/2B/2C) channel access procedures specified in TS 37.213 are used for NR sidelink operation in a shared channel.

#### 16.9.x.2 Channel Access Priority Classes for Sidelink (SL-CAPC)

The SL-CAPC of SL radio bearers and SL MAC CEs are either fixed or (pre)configurable as follows:

* Fixed to the highest priority for all SL-SRBs and SL MAC CEs
* (Pre)configurable per DRB for all SL-DRBs

When choosing the SL-CAPC for a SL-DRB the network takes into account the PQI of all QoS flows mapped to that SL DRB. Table 16.9.x-1 below shows which SL-CAPC should be used for which standardized PQI(s), i.e., which SL-CAPC to use for a given QoS flow. For a UE in RRC\_IDLE/RRC\_INACTIVE or OOC, the UE uses the SL-CAPC configured in SIB/Pre-configuration when the QoS flow can be mapped to a non-default SLRB, or when the default SLRB is used for the QoS flow and the SL-CAPC of the default SLRB is configured.

When the default SLRB is used for the QoS flow and the SL-CAPC of the default SLRB is not configured:

- if the flow is associated with standardized PQI, the UE derives SL-CAPC for the flow directly from the table below

- if the flow is associated with non-standardized PQI, the UE may select the SL-CAPC of the standardized PQI having the closest PDB.

The UE then selects the lowest SL CAPC priority level (highest SL CAPC value) among the QoS flows to determine the SL CAPC for the default SLRB.

Table 16.9.x-1: Mapping between Channel Access Priority Classes for SL-U and PQI

|  |  |
| --- | --- |
| SL-CAPC | PQI |
| 1 | 21, 22, 23, 24, 26, 55, 56, 57, 58, 60, 90, 91, 92, 9393 82, 83, 84, 85 |
| 2 | 25 |
| 3 | 59, 61 |
| 4 | - |
| NOTE: lower SL-CAPC value means higher priority- |

When performing Type 1 LBT for the transmission of a sidelink TB and when the SL-CAPC is not indicated in the DCI, the SL UE shall select the SL-CAPC as follows:

- If only SL MAC CE(s) are included in the SL TB, the highest priority SL-CAPC is used; or

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

- The lowest priority SL-CAPC of the SL logical channel(s) with MAC SDU multiplexed in the TB is used otherwise.

The highest priority SL-CAPC is used for SBCCH SDU transmissions and PSFCH transmissions.

#### 16.9.x.3 Sidelink Specific Consistent LBT Failure

SL-specific consistent LBT failure detection and recovery procedure is supported for SL-U. When the UE detects SL-specific consistent LBT failure, it performs the actions as specified in TS 38.321 [x]. SL-specific consistent LBT failure detection is per RB-set.

A SL UE in RRC\_CONNECTED can indicate SL-specific consistent LBT failure to the gNB using a SL MAC CE that indicates the RB set(s) where SL-specific consistent LBT failure was detected. A SL UE using mode 2 resource allocation triggers resource reselection and/or resource pool reselection upon SL-specific consistent LBT failure. In such case, resources in failed RB set(s) are excluded from resource (re)selection until consistent LBT failure on the RB set(s) is cancelled based on conditions in TS 38.321 [x]. The UE triggers SL RLF for all PC5-RRC connections when the UE has triggered SL-specific consistent LBT failure in all RB sets.

#### 16.9.x.4 COT Sharing

UE to UE COT sharing is supported in NR sidelink operation for SL-U. When performing SL-SSB transmission(s), a responding UE can utilize a COT shared by a COT initiating UE when the responding UE intends to transmit SL-SSB in the shared COT. When performing PSFCH transmissions, a responding UE can utilize a COT shared by a COT initiating UE when at least one of the responding UE’s PSFCH transmissions is intended for the COT initiating UE.

When performing PSSCH/PSCCH transmissions, a responding UE can utilize a COT shared by a COT initiating UE when the responding UE’s transmission(s) is intended for the COT initiating UE. In unicast, the destination/source ID of the responding UE’s transmission should match the source/destination ID of the initiator UE’s transmission for the same unicast link. In groupcast/broadcast, destination ID of the responding UE’s transmission should match the initiator’s destination ID. In addition, a COT initiating UE may transmit an additional pair of source/destination ID in either unicast, groupcast, or broadcast. In this case, the responding UE can utilize a COT shared by a COT initiating UE if the destination/source (for unicast) or destination (for groupcast/broadcast) of the responding UE transmission match what is carried in the additional ID(s). In all cases, a UE’s transmissions in a shared COT should have CAPC value that is equal to or smaller than the CAPC value indicated in the COT sharing information. In order to satisfy the COT sharing requirements, a responding UE may perform an enhanced LCP procedure as specified in 38.321 [x]. When receiving multiple COT sharing indications from different COT initiators, it is up to UE implementation which shared COT is used.

#### 16.9.x.5 Resource Allocation

A UE using mode 2 resource allocation may support resource selection enhancements to avoid LBT blocking and increase COT resource utilization. If transmission in slot(s) before a reserved resource is able to share its initiated COT to the reservation, the UE may be (pre)configured to prioritize/select resource(s) in the slot(s) for transmission. To avoid blocking, a UE may avoid selection of a number of consecutive resources (up to UE implementation) before a reserved resource. Furthermore, a UE may avoid selection of a number of consecutive resources (up to UE implementation) after a reserved resource.

A UE using mode 2 resource allocation supports resource selection for multiple consecutive slot transmission (MCSt). A UE autonomously determines whether to use MCSt, and the number of consecutive slots in an MCSt up to the maximum COT duration for a specific CAPC as defined in TS 37.213 [y]. MCSt can be used for transmission of a single TB or multiple TBs. For each TB transmitted in an MCSt, the UE triggers resource (re)selection only when LBT failure is detected on the resources for the initial transmission and all retransmissions of the TB. When performing LCP procedure for transmission of multiple TBs in an MCSt, a UE may perform an enhanced LCP procedure as specified in 38.321 [x] based on the CAPC used for LBT of the first TB.

### 16.9.Y Sidelink CA

Carrier aggregation (CA) in sidelink is supported for mode 2 in V2X case only. It applies to both in coverage UEs and out of coverage UEs. Each resource pool (pre)configured for sidelink is associated to a single carrier. A UE using mode 2 resource allocation performs carrier (re)selection and may select one or more carriers used for sidelink.

The carrier(s) that can be used for transmitting data are provided by the V2X layer per QoS flow, and LCP ensures that data from a SLRB is transmitted on a carrier for which all mapped QoS flow ids are allowed to use the carrier.

For groupcast and broadcast, when the V2X layer provides multiple carriers in service to carrier mapping information to the AS, TX profile is used to indicate whether the transmission corresponding to the service is backward compatible or not. When backward compatibility is needed, the TX UE uses only the legacy carrier without PDCP duplication, or uses PDCP duplication with at least the legacy carrier.

For groupcast and broadcast, carrier selection is performed at MAC layer, depending on the CBR of the configured carriers and logical channel priority. Carrier (re)selection may be performed when resource (re)selection is triggered, or when there is no SL grant for a sidelink process on any allowed carrier, and is triggered for each sidelink process. In order to avoid frequent switching across different carriers, the UE may keep using a carrier already selected for transmission, if the measured CBR on this carrier is lower than a (pre)configured threshold. For a UE using mode 2 resource allocation, logical channel prioritization is performed for a sidelink resource on a carrier depending on the CBR measured on the carrier and the logical channel priority, as specified in 3GPP TS 38.321 [x]. For unicast, CA related capability is exchanged between the TX UE and RX UE, and the TX UE delivers the carrier configuration to the RX UE in PC5-RRC. For unicast, carrier selection and logical channel prioritization is performed similar to groupcast and broadcast among the carriers delivered in the carrier configuration. SL CA for unicast is not applied until the carrier configuration signaling is complete. Carrier (re)selection may be performed and a new carrier configuration is sent to the RX UE when the TX UE detects carrier failure on a specific carrier, as specified in 3GPP TS 38.321 [x].

Sidelink packet duplication is supported for sidelink and is performed at PDCP layer. For sidelink packet duplication for transmission, a PDCP PDU is duplicated at the PDCP entity. The duplicated PDCP PDUs of the same PDCP entity are submitted to two different RLC entities and associated to two different sidelink logical channels respectively. The duplicated PDCP PDUs of the same PDCP entity are only allowed to be transmitted on different sidelink carriers. For a SL DRB, sidelink packet duplication is (pre)configured in the bearer configuration. For a SL SRB, whether to use duplication is decided by the TX UE. In unicast, the TX UE sends the duplication configuration to the RX UE in PC5-RRC.

There are specified logical channel identities which apply to the sidelink logical channel used for sidelink packet duplication exclusively as specified in 3GPP TS 38.321 [x].

# Annex - Collection of RAN2 agreements and Relevant RAN1 agreements

Yellow highlight - agreement captured in stage-2

Cyan highlight – stage 3 level agreement, or agreement not captured in specification

RAN2#119bis agreements

Agreement on CAPC:

1: 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.

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

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

4: 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).

5: 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.

6: 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.

7: 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:

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

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

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

Agreement on consistent LBT failure:

1: 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.

2: Support SL-specific consistent LBT failure detection and recovery procedure in the MAC for SL-U. Details of recovery to be further worked on granularity of (consistent) LBT failure.

3: Send LS to RAN1 asking “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 can be considered as being detected (e.g. per Resource Pool, per RB set, per SL BWP, etc.)?

 - Detailed wording can be discussed during the email discussion. Some background information (e.g. why/what we (actually) ask) can be also provided.

4: 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.

5: 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).

6: 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.

7: Support the mechanism that a mode-1 UE can indicate the SL-specific consistent LBT failure to the gNB. FFS on a mode-2 UE in RRC\_CONNECTED.

RAN2#120 agreements

Agreements on SL CAPC mapping table:

1: Confirm the WA “PQI is used to determine the CAPC mapping as in NR-U” as baseline.

2: Working assumption

 - Mapping PQI 90/91/92/93/21/22/23/55/56/57/58 to CAPC priority class 1. FFS on other SL CAPC mapping criterion.

 - Mapping PQI 59/61 to CAPC priority class 3.

 - Mapping PQI 25 to CAPC priority class 2.

 - Mapping PQI 24/26/60 to CAPC priority class 1

Agreement on SL CAPC rules

1: Working assumption: If PQI-based CAPC mapping is agreed, as in NR-U, the lowest priority CAPC of the logical channel(s) with MAC SDU multiplexed in the TB is used regardless of whether the TB also contains SL MAC CEs in addition to MAC SDUs.

Agreements on SL CAPC for SBCCH and PSFCH

1: The highest priority SL CAPC is used for SBCCH SDU transmission (if SL CAPC is applied to SBCCH SDU).

2: SL CAPC for PSFCH is left to RAN1.

Agreements on SL CAPC for RRC inactive/idle/OOC UE

1: For an IDLE/INACTIVE/OOC UE, if the QoS flow of non-standardized PQI can be mapped to a non-default SLRB, the UE determines the CAPC of this non-standardized PQI using the CAPC of this SLRB.

2: Working assumption: Use the CAPC of the standardized PQI or the CAPC of non-standardized PQI configured in SIB/pre-configuration which best matches the QoS characteristics of the current non-standardized PQI based on one or more QoS characteristics

Agreements on cast type/DST/unicast link specific SL consistent LBT failure detection

1: Working assumption: SL-specific consistent LBT failure detection is not relevant to cast type/DST/unicast link.

Agreements on mode 2 UE in RRC connected

1: In SL-U, support the mechanism that a mode-2 UE in RRC\_CONNECTED can indicate the SL-specific consistent LBT failure to the gNB.

Agreements on SL DRX impact

1: If there is one PSFCH resource for a PSSCH, start sl-drx-HARQ-RTT-Timer for the corresponding Sidelink process in the first slot after the end of the corresponding PSFCH resource when the SL HARQ feedback is not transmitted due to the LBT failure.

2: RAN2 waits for RAN1 decision/progress for multiple PSFCH resources case

Agreements on SL CG impact

1: RAN2 waits for RAN1 decision on how to support consecutive PSSCHs for SL transmissions.

Agreements on SL COT sharing

1: RAN2 will study whether/how LCP is impacted from COT sharing.

2: RAN2 will consider interaction between DRX operation and shared COT.

RAN2#121 agreements

Agreements on SL CAPC mapping table:

1: Mapping PQI 90/91/92/93/21/22/23/55/56/57/58 to CAPC priority class 1.

2: Mapping PQI 59/61 to CAPC priority class 3.

3: Mapping PQI 25 to CAPC priority class 2.

4: Mapping PQI 24/26/60 to CAPC priority class 1.

Agreement on SL CAPC mapping rule:

1: As in NR-U, the lowest priority CAPC of the logical channel(s) with MAC SDU multiplexed in the TB is used regardless of whether the TB also contains SL MAC CEs in addition to MAC SDUs.

Agreement on SL CAPC mapping rule:

1: For an IDLE/INACTIVE/OOC UE, if a QoS flow cannot be mapped to a non-default SLRB: 1) if the per-bearer CAPC is configured in SIB/Pre-configuration, the UE use the configured CAPC; 2) else, select CAPC of the standardized PQI which best matches the QoS characteristics of the non-standardized QoS flow based on one or more QoS characteristics. For a standardized QoS flow, CAPC is directly derived from CAPC table.

Agreement on SL consistent LBT failure detection

1: SL-specific consistent LBT failure detection is not performed per cast type/DST/unicast link.

Agreement on SL LCP and COT

1: UE can select 1/ either to do a changed-LCP, in order to satisfy the COT requirement, and to do the type-2 LBT (How to do the LCP can be decided after RAN1 agreement) 2/ or to do a legacy-LCP, e.g. using type-1, type-2 LBT. FFS on the need of assistance INFO to initiating UE. FFS on spec impact, e.g., conditions for UE to choose either solution.

Agreements on SL DRX

1: RAN2 deprioritizes the SL DRX enhancement on active time extension for SL LBT failure.

2: Working assumption: Not define shared COT as SL DRX active time.

3a: Working assumption: If multiple PSFCH occasion per PSCCH/PSSCH is supported in RAN1, if HARQ A/N is successfully transmitted in one PSFCH occasion, Rx UE starts the sl-drx-HARQ-RTT-Timer for the corresponding Sidelink process in the first slot after the end of the corresponding PSFCH transmission carrying the SL HARQ feedback.

3b: If multiple PSFCH occasion per PSCCH/PSSCH is supported in RAN1, if LBT failure happens in all PSFCH occasions, Rx UE starts the sl-drx-HARQ-RTT-Timer for the corresponding Sidelink process in the first slot after the end of the last PSFCH occasion for the SL HARQ feedback.

Agreements on SL CG

1: Working assumption: Not to support CG retransmission timer in SL-U.

Agreements on SL consistent LBT failure

1: Consistent LBT failure does not trigger the UE in RRC idle/inactive to enter RRC connected.

2: Working assumption:

 - If SL LBT failure granularity is resource pool/RB set, UE uses the MAC CE to report consistent LBT failure to the gNB.

 - If SL LBT failure granularity is resource pool/RB set, the MAC CE indicates SL pool/RB set where SL consistent LBT failure was declared.

 - If SL LBT failure granularity is SL BWP (and the UE declares SL consistent LBT failure, the UE declares SL RLF and the existing RRC message is used for SL RLF indication for all UC connections. FFS on the need of new cause value.

 - If SL LBT failure granularity is resource pool/RB set, UE triggers SL RLF for all UC connections when UE has triggered consistent SL LBT failure in all resource pools/RB sets.

3: Working assumption: If SL LBT failure granularity is resource pool/RB set, support the change of resource pool/RB set of which consistent SL LBT failure has not been triggered from SL consistent LBT failure by TX UE upon consistent LBT failure detection. FFS whether/how the triggered consistent SL LBT failure is cancelled.

Agreements on SL resource (re)selection

1: RAN2 understands UE triggers a resource (re)selection when PSSCH transmission was not performed due to an LBT failure indication from L1. FFS on MCST case. Send LS to RAN1 to check if there is any concern.

2a: RAN2 understands L1 handles LBT impact to/from other UEs’ reserved resources in SL candidate resource selection (inter-UE case).

2b: RAN2 will study how MAC performs resource (re)selection with the consideration of LBT impact to its own candidate resource (intra-UE case).

3: Will send LS to RAN1 to check if there is any concern.

Agreements on reserved resource and COT

1: For type-1 LBT, if UE observes buffer status change after LBT initiation (i.e., before MAC PDU generation), which leads to a higher CAPC priority than the value used for type-1 LBT, it’s left to UE implementation how to handle this case (like NR-U). No spec impact.

Agreements on SL LBT failure indication granularity

1: SL LBT failure indication granularity is per SL RB set.

RAN2#121bis agreements

Agreement

SL C-LBT failure is declared per RB-set

Confirm the following working assumption:

UE uses the MAC CE to report consistent LBT failure to the gNB

Agreement:

Uu MAC CE indicates RB set(s) where C-LBT failure happens.

Confirm the working assumption:

UE triggers SL RLF for all UC connections when UE has triggered consistent SL LBT failure in all RB sets.

Agreement:

RAN2 will wait for more conclusion from RAN1 on the assistance information for COT sharing.

Agreement:

If the resource to be used is within a shared COT, and if PDU not generated before COT arrival, and there is data in buffer satisfying COT requirement, at least enhanced LCP should be allowed. FFS on the condition for UE to use enhanced LCP. FFS on spec impact.

Agreement:

If a UE decides to use the resource in a shared COT, and when enhanced LCP is decided to be used, for destination selection step in enhanced LCP, at least further restrict the destinations to be the candidates allowed by the COT (as defined by RAN1).

Confirm the working assumption:

Not to support CG retransmission timer in SL-U.

Agreement:

For ‘best-match’ issue, UE may determine it based on closest PDB, and capture it in stage-2 spec only. Detailed wording can be discussed in running CR phase. FFS on whether to consider default priority as well.

Agreement:

For beam failure detection, reuse Uu design of timer + counter based mechanism as baseline, and R2 further study how SL beam failure is detected. FFS on Tx or Rx UE based manner.

Agreement:

Upon beam failure is detection, support BFR signaling exchange between peer UEs, and further study e.g., RLF declaration due to beam failure.

Agreement:

Proposal 2. Support one independent HARQ entity per carrier used for NR sidelink communication and one transport block is generated per carrier.

Proposal 3. Support that each transport block and its retransmissions are mapped to a same single carrier.

Agreement:

Proposal 3: For groupcast/broadcast, as in LTE SL CA, the carrier(s) that can be used for transmitting data are configured by V2X layer for the L2 destination. FFS on backwards compatibility issue.

Agreement

Proposal 8: Packet duplication for NR sidelink is performed at the PDCP layer. The duplicated PDCP PDUs of the same PDCP entity are submitted to two different RLC entities and associated to two different sidelink logical channels respectively.

Proposal 9: RAN2 agrees that LCH mapping restriction shall be defined such that the duplicated PDCP PDUs of the same PDCP entity are only allowed to be transmitted on different NR sidelink carriers.

Agreement:

Proposal 16: For NR sidelink PDCP duplication, reuse the hard-coded way for paired sidelink LCID to identify duplicated sidelink LCHs (i.e. for a unified design for all Bcast/Gcast). The specific SL LCID values occupied are left to Stage-3. FFS on Unicast case.

Agreement:

Proposal 10: For TX carrier (re)selection triggers in NR sidelink CA, reuse the triggers for TX carrier (re)selection per sidelink process in LTE sidelink CA as follows at least for GC/BC

if the resource (re)selection is triggered with the sidelink process.

if there is no sidelink grant associated with the sidelink process on any carrier allowed for the STCH as indicated by upper layers (i.e., RRC layer and V2X layer).

FFS on unicast case.

Agreement:

Proposal 7 For LCP, only allow the LCHs having a priority whose associated CBR threshold for reselection is no lower than the CBR of the carrier when the carrier is (re-)selected. FFS on how to determine the per-carrier CBR at least for GC/BC.

FFS on unicast case.

Agreement:

Proposal 5 NR SL CA TX carrier (re)selection follows LTE CA solution, i.e., define 1) per-carrier-per-priority CBR threshold for carrier (re)selection, and 2) per-carrier-per-priority CBR threshold for carrier keeping. And final carrier selection is done based on the lowest CBR value across carriers. Where the priority is the LCH priority.

FFS on unicast case.

Agreement:

Proposal 1: Based on observation that section 6.1.2.12 of TS 24.587-v18.0.0 has captured V2X layer can be provisioned with service to frequency mapping for unicast. RAN2 assume it is applicable to PC5 unicast SL CA after link has been established. RAN2 notify SA2 this assumption and ask their input on identified questions.

Agreement:

RAN2 ask SA2 input on Question 1: According to TS 24.588, V2X layer is only provisioned with a mapping between service identifier and initial L2 address used for unicast. But service identifier is invisible to AS-layer, and the initial L2 ID will only be used in DCR and be replaced by a self-chosen L2 ID in PC5-S link establishment procedure. Then, after L2 ID changes, whether/how UE's AS layer can obtain the mapping between L2 ID and frequencies.

Agreement:

RAN2 ask SA2 input on Question 2: According to TS 24.587, PC5 unicast allows UEs to add/modify/remove V2X services/PC5 QoS flows to the same L2 ID pair. Then, given service info is invisible to AS layer, how can the UE ensure the modified V2X services to be transmitted only on the corresponding frequencies in the V2X layer?

RAN2#122 agreements (partial)

* Option1: Rely on resource pool (re)selection (P1:5554)
* Option2: Exclusion of RB set(s) that SL C-LBT failure was detected in (candidate) resource selection + resource pool (re)selection
* Option 2 is agreed.
	+ With option2, when the UE switches to resource pool (re)selection?
		- Option1: When SL C-LBT failure was detected for all RB-sets within a selected resource pool? (P3:4805)
		- Option2: When SL C-LBT failure was detected for RB-sets > threshold within a resource pool? (P8:4831)
		- Option3: When the size of S\_A < threshold? (P10a:5089)
		- Option4: Up to UE implementation? (P1:4666)

Option 1 is baseline. Option 4 is allowed even when option1 doesn’t happen.

* MAC informs the RB set information where SL C-LBT failure was detected.
* L1 performs the resource exclusion for the RB set that SL C-LBT failure was detected.
* RAN2 will send a LS to RAN1 to ask to take it into consideration in their job.

**SL C-LBT failure recovery (mode 1)**

* Leave it to gNB implementation after UE reporting SL C-LBT failure indication. No spec change. (P4:4831)
* Agreed.
* Counting LBT failure indication regardless of whether LBT failure was provided because of S-SSB transmission or data transmission when RB set for S-SSB transmission belongs to the selected TX resource pool.
* Counting LBT failure indication regardless of whether LBT failure was provided because of PSFCH transmission or not when RB set for PSFCH transmission belongs to the selected TX resource pool. FFS when multiple PSFCH occasions are configured.

**SL C-LBT cancellation**

* Mode 1
	+ Upon SL C-LBT failure MAC CE transmission (P5:4666)
* Agreed.
* Working assumption: For shared COT, CAPC restriction is applicable to enhanced LCP according RAN1 agreement on CAPC requirement.

Priority is not considered in best-matched rule.

* Working assumption: In case of multiple PSFCH occasion per PSCCH/PSSCH, if HARQ A/N is successfully transmitted in one PSFCH occasion, Rx UE starts the sl-drx-HARQ-RTT-Timer for the corresponding Sidelink process in the first slot after the end of the corresponding PSFCH transmission carrying the SL HARQ feedback.
* Working assumption: In case of multiple PSFCH occasion per PSCCH/PSSCH, if LBT failure happens in all PSFCH occasions, Rx UE starts the sl-drx-HARQ-RTT-Timer for the corresponding Sidelink process in the first slot after the end of the last PSFCH occasion for the SL HARQ feedback.
	+ Yes (P3:4757/P1:4794/P3:4807/P9:5230)
	+ Yes only for UC (P1:6384)
		- For GC, Rx UEs start the sl-drx-HARQ-RTT-Timer for the corresponding Sidelink process in the first slot following the last PSFCH occasion for SL HARQ feedback (P3: 6384)

[Session chair]: For GC, think P3 in R2-2306384 raised a valid issue. We can further think for GC.

* Working assumptions are confirmed at least for UC.
* Working assumption: Not define shared COT as SL DRX active time.
	+ Yes (P4:4757/P8:4977/P2:5091/P8:5230)
	+ No, wait for RAN1 conclusion on additional ID (P2:4794/P4:4807/P9:5687)

[OPPO]: Better to confirm WA this meeting otherwise we leave too many dependencies with RAN1. If additional ID is decided in RAN1, we can revisit it. [LG]: Whether to have assistence information or not may also impact on this WA. [IDC]: Agree with OPPO.

[Session chair]: Define shared COT as SL DRX active time?

- Yes: 5 companies support

- No: 7 companies support

* Confirm the WA. If RAN1 introduces additiona ID, we can revisit it.

**SL CAPC when CAPC of the default SLRB is not configured (P1:4757)**

* Option1: up to UE implementation to decide it based on the CAPC of the associated QoS flows
* Option2: select the lowest CAPC priority level (highest CAPC value) among the associated QoS flows (P2:4807, P4:5687)

[ZTE, Apple, LG, NEC, Xiaomi]: Prefer option1. [Lenovo, Huawei, IDC, Intel]: Option1 may bring fairness issue. Support option2.

* Option2 is agreed.

Agreement:

Proposal 10: For TX carrier (re)selection triggers in NR sidelink CA, reuse the triggers for TX carrier (re)selection per sidelink process in LTE sidelink CA as follows at least for GC/BC

if the resource (re)selection is triggered with the sidelink process.

if there is no sidelink grant associated with the sidelink process on any carrier allowed for the STCH as indicated by upper layers (i.e., RRC layer and V2X layer).

FFS on unicast case.

Agreement:

Proposal 7 For LCP, only allow the LCHs having a priority whose associated CBR threshold for reselection is no lower than the CBR of the carrier when the carrier is (re-)selected. FFS on how to determine the per-carrier CBR at least for GC/BC.

FFS on unicast case.

Proposal 5 NR SL CA TX carrier (re)selection follows LTE CA solution, i.e., define 1) per-carrier-per-priority CBR threshold for carrier (re)selection, and 2) per-carrier-per-priority CBR threshold for carrier keeping. And final carrier selection is done based on the lowest CBR value across carriers. Where the priority is the LCH priority.

FFS on unicast case.

* The copied agreement for GC/BC is also applicable for UC. TX carrier reselection is done among the carriers that peer UE also supports.

Agreement:

Proposal 16: For NR sidelink PDCP duplication, reuse the hard-coded way for paired sidelink LCID to identify duplicated sidelink LCHs (i.e. for a unified design for all Bcast/Gcast). The specific SL LCID values occupied are left to Stage-3. FFS on Unicast case.

* The copied agreement for GC/BC is also applicable for UC.

RAN2#123 agreements

Agreements on SL C-LBT failure recovery (RRC connected mode 2)

1: C-LBT failure recovery for RRC idle/inactive mode 2 is applied.

Agreements on C-LBT failure cancellation conditions

1: Upon MAC reset.

2: Upon C-LBT count and/or timer reconfiguration.

3: Based on a timer expiry (the timer starts upon C-LBT failure)

Agreements on C-LBT failure with PSFCH

1: Remove “*FFS when multiple PSFCH occasions are configured.*” from the following agreement.

 “*Counting LBT failure indication regardless of whether LBT failure was provided because of PSFCH transmission or not when RB set for PSFCH transmission belongs to the selected TX resource pool. FFS when multiple PSFCH occasions are configured.*”

2: RAN2 understands LBT failure indication can be provided from L1 once each transmission fails per PSFCH occasion in multiple PSFCH occasions.

Agreements on C-LBT failure with S-SSB and/or PSFCH

1: RAN2 will not do anything to handle S-SSB and/or PSFCH that does not belong to the selected SL resource pool unless RAN1 asks.

Agreements on SL C-LBT failure MAC CE

1: RAN2 understands 5bits indication per SL carrier. Will ask how RB set index is derived, whether RB set index is unique within SL-BWP, to RAN1.

2: LCP order of SL LBT Failure MAC CE is defined as the next of Uu LBT Failure MAC CE.

3: Dedicated SR configuration can be configured. FFS if we need to consider more.

Agreements on SL C-LBT failure detection and recovery counter and timer

1: Configured per SL BWP.

2: Maintained per RB set.

Agreements on SL RLF report as the result of C-LBT failures

1: No new code-point or a cause value is needed.

Agreements on enhanced LCP for shared COT

1: For mode2, enhanced LCP is used if the shared COT is used with LBT type 2. All other cases, enhanced LCP is not used.

2: No change compared to enhanced LCP in mode2 is needed for the case when the COT responding UE receives mode 1 resource and shared COT from COT initiating UE.

Agreements on enhanced LCP for shared COT

1: R2 does not pursue additional conditions to allow UE to select enhanced LCP besides the agreed ones.

Agreements on resource (re)selection with consideration of intra-UE LBT impact

1: R2 makes the WA that UE may avoid selection of N consecutive resource(s) before a reserved resource of its own. Where the selection of N is up to UE implementation from {0,1,2}. Further details (including MCSt) are to be clarified after R1 confirmation on RAN1 option1.

2: R2 makes the WA that UE may avoid selection of M consecutive resource(s) after a reserved resource of its own. Where the selection of M is up to UE implementation (at least including 0). Further details (including MCSt) are to be clarified after R1 confirmation on RAN1 option1.

Agreements on multiple shared COTs

1: It’s up to UE implementation to use which one out of multiple ones when receiving multiple COT sharing indications from different COT initiators.

Agreements on TX profile extension for SL CA

1: When the upper layer provides multiple carriers in service to carrier mapping information to AS, we need TX profile extension to inform whether the transmisson corresponding the service is backward compatibile or not. If backward compatible is needed, only legacy carrier is used for transmission when PDCP duplication is not used. If PDCP duplication is used, at least legacy carrier is used. FFS whether to use PDCP duplication or not is up to UE implementation.

Agreements on SL CA before UC link is established

1: SL CA is not applied before UC link is established. Will be included in the reply LS to SA2.

Agreements on SA2 question

1: On Question 1 of S2-2307794, reply SA2 "RAN2's question 1 is intended to discuss after PC5 link establishment. And RAN2 assume that the AS layer may maintain a mapping between old L2 ID (before PC5 link establishment) and new L2 ID (after PC5 link establishment) by its implementation".

Agreements on per-carrier CBR

1: Confirms the working assumption “Same principle as LTE V2X CA is applied to determine per-carrier CBR” as an agreement.

Agreements on CSI reporting enhancement for SL CA

1: No CSI reporting enhancement for SL CA in Rel-18.

RAN2#123bis agreements

**Agreements on resource (re)selection:**

1. R2 not pursue the UE behavior of prioritizing the resources within a shared COT during resource selection step.
2. R2 not pursue the UE behavior of triggering a resource reselection upon reception of a usable shared COT.
3. MAC layer, based on UE implementation, decides whether to indicate a “number of consecutive slots for MCSt” larger than 1.
4. MAC layer, based on UE implementation, decides the value of “number of consecutive slots for MCSt”, as long as it meets the CAPC maximum COT duration requirement.
5. For a resource pool configured with PSFCH resource, UE can NOT select consecutive slots (i.e., MCSt) for transmissions of a single TB.
6. In case of MCSt, still rely on the legacy remaining PDB indication from MAC to PHY upon resource (re)selection.

**Agreements on resource (re)selection:**

1. R2 confirm the WA that UE may avoid selection of N consecutive resource(s) before a reserved resource of its own, if the two cannot constitute a MCSt transmission. Where the selection of N from {0,1,2} and the judgment of whether MCSt transmission is feasible are both up to UE implementation.
2. R2 confirm the WA that UE may avoid selection of N consecutive resource(s) after a reserved resource of its own, if the two cannot constitute a MCSt transmission. Where the selection of M (at least including 0). and the judgment of whether MCSt transmission is feasible are both up to UE implementation.

**Agreements on HARQ RTT:**

1. For Groupcast, Rx UEs start the sl-drx-HARQ-RTT-Timer for the corresponding Sidelink process in the first slot following the last PSFCH occasion for SL HARQ feedback.

**Agreements on the need of C-LBT failure indication to the peer UE:**

1. Not to introduce C-LBT failure indication to the peer UE

**Agreements on MCSt:**

1. RAN2 confirms that only Approach 1 and 2 are supported for MCSt in Rel-18 SL-U

**Agreements on MCSt:**

1. Working assumption: Trigger resource (re)selection if all initial transmission and retransmission within MCSt fail due to LBT failure. It should provide minimum specification change.

**Agreements on MCSt:**

1. No additional mechanism is needed to handle multiple TB case.

**Agreements on MCSt:**

1. For the subsequent slots in MCSt, LCP procedure for COT initiating UE is enhanced: the LCHs with lower or equal CAPC than the CAPC value used for LBT check for the first TB.

**Agreements on MCSt:**

1. Not to introduce reporting a “number of consecutive slots for MCSt” to the gNB

**Agreements on CG:**

1. Not support cross-CG period autonomous retransmission and asynchronous HARQ.

**Agreements on SL C-LBT failure cancellation:**

1. C-LBT-F cancellation based on UL C-LBT-F MAC-CE report does not apply to RRC\_CONNECTED mode-2 UE.

**Agreements on LBT type determination**

1. R2 not pursue specifying which layer to decide on LBT type

**Agreements on DTX based SL RLF**

1. TX UE will not regard the SL transmission as SL DTX, when LBT failure is detected for its SL transmission.
2. the TX UE increases the DTX counter by one when it fails to detect the HARQ feedback on all the associated PSFCH resources. Stage 3 spec impact can be further checked.

**Agreements on SL-FR2**

1. Study for SL FR2 for Rel-18 is completed from RAN2 perspective

**Agreements on PC5-RRC**

1. Confirm the working assumption “SL CA/PDCP duplication is applied to PC5-RRC after SL link is established”.

**Agreements on need of primary leg**

1. Not to define primary leg, RLC entity
2. PDCP control PDU is sent over one leg, RLC entity, determined by UE implementation.

**Agreements on duplicated PDU discard**

1. Duplicate PDU discard procedure applied to the Uu PDCP entity associated with AM RLC entities is reused for SL PDCP duplication in unicast.

**Agreements on PC5-RRC**

1. Include NR SL-CA-related capability into UECapabilityInformationSidelink message.
2. Include carrier configuration into RRCReconfigurationSidelink message.
3. If UE-A delivers RRCReconfigurationSidelink to UE-B including carrier configuration, it takes effect for the subsequent transmission from UE-A to UE-B for all SLRBs, after receiving RRCReconfigurationCompleteSidelink.
4. Legacy single carrier is used for PC5-S/PC5-RRC signaling exchange before receiving RRCReconfigurationCompleteSidelink.

**Agreements on SRBs**

1. SL PDCP duplication can be applied to SL-SRB3 only after receiving RRCReconfigurationCompleteSidelink.
2. SL PDCP duplication can be applied to SL-SRB1/2 only after receiving RRCReconfigurationCompleteSidelink.
3. Will not discuss the scenario that is related to SL relay.

**Agreements on security**

1. Small LCID (between 1 to 19) among all LCIDs associated with PDCP entity is used in security handling for PDCP duplication.

**Agreements on CSI reporting MAC CE**

1. Working assumption: It is up to UE implementation in which carrier the UE sends CSI reporting MAC CE.

**Agreements on SL RLF**

1. In TX UE, per carrier “carrier failure” is introduced. If “carrier failure” is declared for a carrier, the carrier should be removed/released. The carrier (re)selection can be triggered. For UC, this carrier can be released via PC5 RRC reconfiguration.

**Agreements on CA/PDCP duplication configuration**

1. For STCH, if TX profile indicates backwards-incompatible, for RRC\_IDLE/RRC\_INACTIVE/OOC case, leave the decision of per-LCH carrier set for PDCP duplication to Tx UE implementation.
2. For STCH, if TX profile indicates backwards-incompatible, for RRC\_CONNECTED, dedicated-RRC provides per-LCH carrier set configuration
3. For STCH, if TX profile indicates backwards-incompatible, for RRC\_CONNECTED, for a SLRB configured with duplication, Tx UE uses duplication
4. For SCCH, at least for RRC\_IDLE/RRC\_INACTIVE/OOC cases, leave the decision of per-LCH carrier set for PDCP duplication to Tx UE implementation
5. For SCCH, add additional RLC leg configuration into specified SCCH configuration (w/o disable/enable flag), and leave the enable/disable decision of PDCP duplication to Tx UE implementation.
6. Include flow-to-carrier mapping for each destination into SUI message.
7. For STCH, if TX profile indicates backwards-incompatible, for RRC\_IDLE/RRC\_INACTIVE/OOC case, the Tx UE uses duplication based on SIB/Preconfiguration (e.g. if PDCP duplication is configured for the SLRB)
8. For STCH, if TX profile indicates backward compatible, leave it to UE implementation on whether to use single carrier transmission or PDCP duplication.

**Agreements on PC5-RRC**

1. For UC, include the PDCP duplication configuration into PC5-RRC, for SRB and DRB. For SRB, PDCP duplication configuration just indicates whether PDCP duplication is used or not.

**Agreements on PDCP duplication activation/deactivation SL MAC CE**

1. Not to define separate PDCP duplication activation/deactivation SL MAC CE (including Uu MAC CE).

RAN2#124 agreements

=> Alt.2 (define new IE for SL CA, i.e., PEMAX,CA = new IE, *sl-maxTransPower-CA*) is agreed.

=> RAN2 understands TX profile for CA/PDCP duplication is applied only to GC/BC.

Proposal 1: For higher layer UE capability signaling, RAN2 to define pdcp-DuplicationSRB-sidelink-r18 and pdcp-DuplicationDRB-sidelink-r18 as UE capability parameters for all cast types for Rel-18 SL evolution.

Proposal 2: For higher layer UE capability signaling to gNB, RAN2 to define sl-LBT-FailureDetectionRecovery-r18 as per UE and for all cast type for Rel-18 SL evolution.

Proposal 3: No need for RAN2 to introduce a further higher layer UE capability for NR SL communication with SL CA, other than RAN1 defined capability “47-v1, NR SL communication with SL CA”.

=> All proposals are agreed.

=> WI is completed.

**Agreements on QoS flows mapping to carriers:**

1. Intersection among QoS flow ids belonging to a SLRB is considered in LCP. RAN2 understand NW/upper layer provides appropriate intersections if the service wants CA/PDCP duplication.

**Agreements on CSI reporting MAC CE:**

1. Working assumption (It is up to UE implementation in which carrier the UE sends CSI reporting MAC CE) is confirmed.

**Agreements on NACK only based HARQ feedback for GC:**

1. For SL-U, RAN2 confirms NACK-only HARQ feedback cannot be supported for groupcast.
2. Add (update) a note for the clarification into MAC. It is up to MAC CR rapporteur how to capture it as a note. Simple normative sentence is also added to 38.300 (up to 38.300 CR rapporteur).

**Agreements on MCSt resource (re)selection triggering:**

1. Working assumption (Trigger resource (re)selection if all initial transmission and retransmission within MCSt fail due to LBT failure. It should provide minimum specification change.) is confirmed.
2. For MCSt, during resource (re)selection, leave it to UE implementation, regarding whether to calculate HARQ retransmission number based on the number of MCSt transmissions, or the number of slot(s) within MCSt transmission.

**Agreements on E-LCP impact on MCSt:**

1. RAN2 to withdraw below RAN2 agreement (For the subsequent slots in MCSt, LCP procedure for COT initiating UE is enhanced: the LCHs with lower or equal CAPC than the CAPC value used for LBT check for the first TB.).

**Agreements on carrier set determination for SCCH (for RRC connected UE):**

1. NW configures carrier set, but if no carrier set in NW configuration, it’s up to UE implementation.

**Agreements on additional carrier determination for STCH in PDCP duplication:**

1. When TX profile extension indicates backward-compatible and if the UE decides to use PDCP duplication, a) Leave it to UE implementation for RRC idle/inactive state and b) Dedicated-RRC provides per-LCH carrier set configuration for RRC connected state.

**Agreements on TX UE’s determination of carrier set to be delivered to the RX UE:**

1. Include simple normative text indicating TX UE determines the carrier configuration with the consideration of at least upper layer configuration, gNB configuration and both TX and RX UEs’ capabilities. Detailed wordings are relied on RRC CR rapporteur.

**SUI enhancement:**

1. Include per-carrier RLF information
2. Per-carrier RLF information is included as explicit information.

**SUI enhancement:**

1. Include TX profile extension information.

**Per-carrier CBR measurement configuration:**

1. Introduce frequency dimension (i.e. carrier index) for SL CBR measurement object configuration. How to capture it in RRC will be discussed in RRC CR implementation.

=> No recovery mechanism for SL carrier failure.

**MCSt (multiple TB case):**

1. For remaining slot(s) in case transmission is successful for one TB in MCSt (multiple TB case), the UE still performs retransmission for this TB in the remaining slot(s).

**MCSt (multiple TB case):**

1. Not introduce “For MCSt with multiple TB case, retransmit TB associated with dropped transmission due to LBT failure on next available MCSt resource, if TB sizes matches.”.

**RRC details:**

1. Upper layer indicate Tx profile per-flow. Send LS to SA2 and CT1 to inform RAN2 decision on granularity of Tx Profile to AS-layer.
2. The “legacy single carrier” in the NR SL CA context is the SL carrier configured by sl-FreqInfoList-r16/sl-FreqInfoToAddModList-r16.
3. For STCH in SL unicast, an RRC\_IDLE/INACTIVE/OoC UE use PDCP duplication, in case the SL-DRB is configured with PDCP duplication in SIB/pre-configuration, and if peer UE’s capability supports it. How to capture that can be up to running-CR discussion.
4. Rely on clause 16.9.Y of the Stage 2 TS 38.300 CR to clarify that “the additional frequency list for sidelink CA operation is only used for V2X case in this release”.
5. Confirm trigger condition in running CR for QoS flow to carrier mapping information reporting, but remove “sl-FreqInfoList/”.
6. If at least one QoS flow having Tx profile with value set to backwards compatible is mapped to the radio bearer, legacy carrier is used for transmission for this radio bearer, for RRC\_IDLE/RRC\_INACTIVE/OOC case. How to capture that is up to running-CR discussion.

**PDCP details:**

1. As in LTE SL CA, configuration of two RLC entities for an SL PDCP entity is only used for PDCP duplication, but not used to support any other functionality (e.g. split bearer and related operation).
2. As in LTE SL PDCP duplication, if the transmitting PDCP entity is configured with PDCP duplication (i.e. configuration of two associated RLC entities), it shall activate and perform PDCP duplication until de-configuration/release of the additional RLC entity. No additional PDCP duplication activation/deactivation mechanism is supported.

**MAC details:**

1. SL DRX and IUC is not considered in resource selection of co-channel coexistence of LTE sidelink and NR sidelink until it becomes clear that SL DRX and IUC are supported in co-channel coexistence.
2. RAN2 agrees to capture UE behavior in the MAC as a NOTE or simple normative text, ensuring that the Mode 2 UE transmits the SL LBT failure MAC CE only once.
3. RAN2 confirm that UE cannot select any MCSt resources at all, even for the transmission of the “HARQ feedback disabled” TB, in a resource pool configured with PSFCH resource.
4. RAN2 agree to add a description that excludes RB set resources where SL C-LBT failure was detected in the random selection part of clause 5.22.1.1.
5. The per-LCH carrier set restriction is to be indicated from RRC-layer to MAC-layer, for LCP procedure.

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## RAN1#109-e Agreements (Partial)

**Agreement**

* UE-to-UE COT sharing is supported in NR sidelink operation in a shared channel (SL-U).
	+ FFS applicable SL channels and signals (e.g., PSCCH/PSSCH, PSFCH, S-SSB) for shared COT access and any restrictions (e.g. whether the COT can be shared with a single UE or multiple UEs)
	+ FFS all other details in compliance with the regulatory requirements
* CP extension (CPE) is supported for NR sidelink operation in a shared channel.
	+ FFS all remaining details including applicable scenarios, usage, PHY structure, etc.

RAN1#111

**Agreement**

For UE-to-UE COT sharing,

* When performing S-SSB transmission(s), a responding UE can utilize a COT shared by a COT initiating UE (using type 1 channel access) when the responding UE is intended to transmit S-SSB within RB set(s) corresponding to the shared COT. When performing PSFCH transmission(s), a responding UE can utilize a COT shared by a COT initiating UE at least when at least one of the responding UE’s PSFCH transmissions in a symbol/slot within RB set(s) corresponding to the shared COT is intended for the COT initiating UE.
	+ FFS: whether a responding UE can transmit PSFCH(s) to UE(s) other than the initiator
* When performing PSSCH/PSCCH transmission(s), a responding UE can utilize a COT shared by a COT initiating UE at least when the responding UE’s PSSCH/PSCCH transmission(s) within RB set(s) corresponding to the shared COT is intended for the COT initiating UE
	+ FFS whether to support the case if a responding UE transmits PSSCH/PSCCH to destination ID other than the source ID of the COT initiating transmission, where the destination ID of the responding UE’s PSSCH/PSCCH transmission(s) can be different from the source/destination IDs of COT initiating UE’s PSSCH/PSCCH transmission when sharing the COT information.
		- FFS: how to determine / what are the restrictions to the destination ID of the responding UE’s PSSCH/PSCCH transmission(s) to utilize the COT shared by the initiating UE.
		- FFS whether the responding UE can utilize the COT when at least the responding UE’s PSCCH transmission in the reserved resources within the shared COT or MCSt is intended for the COT initiating UE and what are the restrictions (e.g., priority, etc.) and indication to the responding UE.
* FFS: UE forwarding/relaying information about a COT initiated by another UE.

RAN1#112

**Agreement**

The CAPC level that should be used for PSFCH transmission, CAPC value (p) should be set to 1 when UE performs Type 1 channel access procedure for PSFCH transmission

**Agreement**

* A responding UE over a shared COT can be:
	+ a receiving UE, which is the target of a PSCCH/PSSCH transmission of a COT initiator
		- In the case of unicast from the COT initiator, within the same COT when the source and destination IDs contained in the COT initiator’s SCI match to the corresponding destination and source IDs relating to the same unicast at the receiving UE
		- In the case of groupcast and broadcast, when the destination ID contained in the COT initiator’s SCI match to a destination ID known at the receiving UE
	+ a UE identified by ID(s), if additional IDs are supported in the COT sharing information (in addition to the source and destination IDs of the PSCCH/PSSCH transmission), when additional IDs are included in the COT sharing information from the COT initiator
		- FFS Limitations on what additional IDs may be included and how they may be indicated

RAN1#113

Working assumption

For Type 1 LBT block issue (inter-UE case), the following option 2 and option 1 are supported separately based on UE capability

* Option 2: If transmission in slot(s) before a reserved resource is able to share its initiated COT to the reservation [with high L1 SL priority], UE may prioritize/select resource(s) in the slot(s) for transmission.
	+ FFS: details of applying this prioritization, which layer to perform above prioritization behaviour, and if the reserved resource belongs to a MCSt, the COT initiating UE should be able to share the COT to cover the whole MCSt
	+ (pre)configuring enabling/disabling option 2 is supported
* Option 1:
	+ UE may avoid selection of N consecutive resource(s) before a reserved resource with high L1 SL priority.
		- The value of N can be selected from {0, 1, 2}
		- The selection of the value of N is up to UE implementation
			* FFS: unless (pre-)configured or indicated by UE reserved resource in SCI
	+ UE may avoid selection of M consecutive resource(s) after a reserved resource when the transmitting symbols of the reserved resource overlap with LBT of the selected resource.
		- M is determined based on UE implementation (at least including 0)
	+ FFS: Which layer to perform above behaviour
	+ FFS: any restriction of M
	+ (pre)configuring enabling/disabling option 1 is supported
* FFS: Whether the above high priority is determined according to a (pre)configured threshold
* Note: both option1 and option2 are optional UE features

RAN1#114

Working assumption

An “Additional ID(s)” field is supported for unicast, groupcast and broadcast, and it is carried in the 2nd stage SCI.

* + - * One pair of L1 source and destination IDs of 24 bits for all cast types + 2 bits for the cast type
				+ At least for unicast, the source ID is set to the source ID of the COT initiator corresponding to the intended destination