**3GPP TSG-RAN2 Meeting # 128R2-241xxxx**

**Orlando, USA, 18th – 22nd November, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  | **38.321** | **CR** | 1996 | **rev** | - | **Current version:** | 18.3.0 |  |
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| *For* [***HE******LP***](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:***  | Rapporteur CR to MAC spec for R18 Positioning |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon, ASUSTek |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_pos\_enh2 |  | ***Date:*** | 2024-11-18 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | **127#1/** In DRX operation, PDCCH monitoring should be performed for SL-PRS-RNTI and SL-PRS-CS-RNTI. While in the current spec, SL-PRS-RNTI and SL-PRS-CS-RNTI is missing**127#2/** Previously, we have agreed that we shall reuse the Sidelink configured grant confirmation MAC CE, which was orignially designed for sidelink configured grant for SL communications, for CG on dedicated SL-PRS resource pool. In the current RRC spec, the index for CG for SL communications and SL positioning has different field name. while the field name for SL positioning is currently missing in the description for the Sidelink configured grant confirmation MAC CE===================UPDATE AFTER R2#127B================During RAN2#127bis, AsusTek pointed out that the same issue as the above issue 2/ also exists for section 5.8.3.In this version of the CR, this issue has been addressed as well===================UPDATE BEOFRE R2#128================**128#1/** In the previous RAN2 meeting, regarding the maximum number of parallel SL-PRS transmission on SL-PRS dedicated pool that a certain UE can maintain, RAN2 agreed on the following However, this agreement was not properly captured within the chapter 5.22.1.1. it needs to be clarified that for dedicated RP, the value of the *nrOfSL-PRSproc* is up to the UE’s implementation to decide.**128#2/** it needs to be clarified that the SL-PRS resource request MAC CE is a MAC CE with variable size. This affect the MAC subPDU format**128#3/** Regarding the cancellation of the SL-PRS resource requst and SR triggered by the SL-PRS resource request, the "pending SL-PRS" should be "pending aperiodic SL-PRS"**128#4/** Regarding the cancellation of SL-PRS Resource Request, the current spec said that the MAC CE is cancelled when the SL grant can accomodate all the SL-PRSs since last time the MAC CE is triggered. This is not correct, that it should be all the pending SL-PRSs since the last transmission of the MAC CE.**128#5/** Misc editorial corrections |
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| ***Summary of change:*** | **127#1/** add SL-PRS-RNTI and SL-PRS-CS-RNTI to DRX operations for the RNTI addressed to which, PDCCH monitoring needs to be performed**127#2/** Add a reference to the field sl-PRS-ConfigIndexCG-r18 in the Sidelink configured grant confirmation MAC CE in section 6.1.3.34 **127#3/** Add the correspoding field name for dedicated pool CG in section 5.8.3=============UDPATE BEFORE R2#128======================**128#1/** Capture the previous agreement on the maximum number of parallel SL-PRS on dedicated pool**128#2/** Clarify that the SL-PRS resource request is a variable size MAC CE**128#3/** Clarify that the pending SL-PRS should be pending aperiodic SL-PRS**128#4/** Clarify that the UE should cancel SL-PRS resource request when all the pending aperiodic SL-PRS since the last transmission of the MAC CE can be transmitted.**128#5/** Other Misc issues**Inter-Operability analysis:**Impacted ArchitectureNR SAImpacted functionality:SL positioningInter-operability: If the UE is implemented according to this CR while the network is not, or If the network is implemented according to this CR while the UE is not, there is no inter-operability issue since the correct UE procedure can be inferred from the other parts of the spec or other specs. |
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| ***Consequences if not approved:*** | Spec is not clear or not aligned with the other parts of spec. |
|  |  |
| ***Clauses affected:*** | 3.2, 5.7, 5.8.3, 5.22.1.1,5.22.1.3.4, 5.22.1.5, 5.22.1.12, 5.22.2.2.2, 5.26.1, 5.26.2, 5.32, 6.1.3.34, 6.1.3.74 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

====================================CHANGE BEGIN====================================

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

A2X Aircraft-to-Everything

AP Aperiodic

BFR Beam Failure Recovery

BRID Broadcast Remote Identification

BSR Buffer Status Report

BWP Bandwidth Part

CE Control Element

CG Cell Group

CG-SDT Configured Grant-based SDT

CI-RNTI Cancellation Indication RNTI

CSI Channel State Information

CSI-IM CSI Interference Measurement

CSI-RS CSI Reference Signal

CS-RNTI Configured Scheduling RNTI

DAA Detect And Avoid

DAPS Dual Active Protocol Stack

DCP DCI with CRC scrambled by PS-RNTI

DL-PRS DownLink-Positioning Reference Signal

DSR Delay Status Report

DTX Discontinuous Transmission

G-CS-RNTI Group Configured Scheduling RNTI

G-RNTI Group RNTI

IAB Integrated Access and Backhaul

INT-RNTI Interruption RNTI

LBT Listen Before Talk

LCG Logical Channel Group

LCP Logical Channel Prioritization

LTM L1/L2 Triggered Mobility

MBS Multicast/Broadcast Services

MCCH MBS Control Channel

MCCH-RNTI MBS Control Channel RNTI

MCG Master Cell Group

MO-SDT Mobile Originated SDT

MPE Maximum Permissible Exposure

MTCH MBS Traffic Channel

MT-SDT Mobile Terminated SDT

N3C Non-3GPP Connection

NCD-SSB Non Cell Defining SSB

NCR Network-Controlled Repeater

NSAG Network Slice AS Group

NUL Normal Uplink

NZP CSI-RS Non-Zero Power CSI-RS

PDB Packet Delay Budget

PEI-RNTI Paging Early Indication RNTI

PHR Power Headroom Report

PQI PC5 QoS Identifier

PS-RNTI Power Saving RNTI

PSI PDU Set Importance

PTAG Primary Timing Advance Group

PTM Point to Multipoint

PTP Point to Point

QCL Quasi-colocation

PPW PRS Processing Window

PRS Positioning Reference Signal

RA-SDT Random Access-based SDT

RRH Remote Radio Head

RS Reference Signal

SCG Secondary Cell Group

SDT Small Data Transmission

SFI-RNTI Slot Format Indication RNTI

SI System Information

SL-PRS-CS-RNTI SL-PRS-Configured Scheduling-RNTI

SL-PRS-RNTI SL-PRS-RNTI

SL-CS-RNTI Sidelink-Configured Scheduling-RNTI

SL-PRS Sidelink-PRS

SL-RNTI Sidelink-RNTI

SpCell Special Cell

SP Semi-Persistent

SP-CSI-RNTI Semi-Persistent CSI RNTI

SPS Semi-Persistent Scheduling

SR Scheduling Request

SRI SRS Resource Indicator

SS Synchronization Signals

SSB Synchronization Signal Block

STAG Secondary Timing Advance Group

STx2P Simultaneous Transmission with 2 Panels

SUL Supplementary Uplink

TAG Timing Advance Group

TCI Transmission Configuration Indicator

TPC-SRS-RNTI Transmit Power Control-Sounding Reference Signal-RNTI

TRIV Time Resource Indicator Value

TRP Transmit/Receive Point

TRS CSI-RS for tracking

U2N UE-to-Network

U2U UE-to-UE

UCI Uplink Control Information

UTO-UCI Unused Transmission Occasion - UCI

UTW Uplink Time Window

V2X Vehicle-to-Everything

ZP CSI-RS Zero Power CSI-RS

====================================NEXT CHANGE ====================================

## 5.7 Discontinuous Reception (DRX)

The MAC entity may be configured by RRC with a DRX functionality that controls the UE's PDCCH monitoring activity for the MAC entity's C-RNTI, CI-RNTI, CS-RNTI, INT-RNTI, SFI-RNTI, SP-CSI-RNTI, TPC-PUCCH-RNTI, TPC-PUSCH-RNTI, TPC-SRS-RNTI, AI-RNTI, SL-RNTI, SL-CS-RNTI, SL-PRS RNTI, SL-PRS-CS RNTI, SL Semi-Persistent Scheduling V-RNTI and cellDTRX-RNTI. When using DRX operation, the MAC entity shall also monitor PDCCH according to requirements found in other clauses of this specification. When in RRC\_CONNECTED, if DRX is configured, for all the activated Serving Cells, the MAC entity may monitor the PDCCH discontinuously using the DRX operation specified in this clause; otherwise the MAC entity shall monitor the PDCCH as specified in TS 38.213 [6].

NOTE 1: Void

RRC controls DRX operation by configuring the following parameters:

- *drx-onDurationTimer*: the duration at the beginning of a DRX cycle;

- *drx-SlotOffset*: the delay before starting the *drx-onDurationTimer*;

- *drx-InactivityTimer*: the duration after the PDCCH occasion in which a PDCCH indicates a new UL, DL or SL transmission for the MAC entity;

- *drx-RetransmissionTimerDL* (per DL HARQ process except for the broadcast process): the maximum duration until a DL retransmission is received;

- *drx-RetransmissionTimerUL* (per UL HARQ process): the maximum duration until a grant for UL retransmission is received;

- *drx-LongCycleStartOffset*: the Long DRX cycle and *drx-StartOffset* which defines the subframe where the Long and Short DRX cycle starts;

- *drx-NonIntegerLongCycleStartOffset* (optional): the Long DRX cycle and *drx-StartOffset* which defines the subframe where the Long and Short DRX cycle start, when the length of the Long DRX cycle and/or the short DRX cycle is not an integer;

- *drx-ShortCycle* (optional): the Short DRX cycle;

- *drx-NonIntegerShortCycle* (optional): the Short DRX cycle whose length is not an integer;

- *drx-ShortCycleTimer* (optional): the duration the UE shall follow the Short DRX cycle;

- *drx-HARQ-RTT-TimerDL* (per DL HARQ process except for the broadcast process): the minimum duration before a DL assignment for HARQ retransmission is expected by the MAC entity;

- *drx-HARQ-RTT-TimerUL* (per UL HARQ process): the minimum duration before a UL HARQ retransmission grant is expected by the MAC entity;

- *drx-RetransmissionTimerSL* (per sidelink process): the maximum duration until a grant for SL retransmission is received;

- *drx-HARQ-RTT-TimerSL* (per sidelink process): the minimum duration before an SL retransmission grant is expected by the MAC entity;

- *drx-LastTransmissionUL* (optional): the configuration to start *drx-HARQ-RTT-TimerUL* after the last transmission within a bundle;

- *ps-Wakeup* (optional): the configuration to start associated *drx-onDurationTimer* in case DCP is monitored but not detected;

- *ps-TransmitOtherPeriodicCSI* (optional): the configuration to report periodic CSI that is not L1-RSRP on PUCCH during the time duration indicated by *drx-onDurationTimer* in case DCP is configured but associated *drx-onDurationTimer* is not started;

- *ps-TransmitPeriodicL1-RSRP* (optional): the configuration to transmit periodic CSI that is L1-RSRP on PUCCH during the time duration indicated by *drx-onDurationTimer* in case DCP is configured but associated *drx-onDurationTimer* is not started;

- *downlinkHARQ-FeedbackDisabled* (optional): the configuration to disable HARQ feedback per DL HARQ process;

- *uplinkHARQ-Mode* (optional): the configuration to set *HARQmodeA* or *HARQmodeB* per UL HARQ process;

- *disableCG-RetransmissionMonitoring* (optional): the configuration to disable starting *drx-HARQ-RTT-TimerUL* for UL transmission over a configured uplink grant;

- *drx-TimeReferenceSFN* (optional): the configuration to indicate how UE initializes of *DRX\_SFN\_COUNTER*.

The following UE variable is used for the DRX operation if *drx-NonIntegerLongCycleStartOffset* is configured:

- *DRX\_SFN\_COUNTER*: the counter that increments when SFN changes to 0. The maximum value of this counter is at least 65535.

Serving Cells of a MAC entity may be configured by RRC in two DRX groups with separate DRX parameters. When RRC does not configure a secondary DRX group, there is only one DRX group and all Serving Cells belong to that one DRX group. When two DRX groups are configured, each Serving Cell is uniquely assigned to either of the two groups. The DRX parameters that are separately configured for each DRX group are: *drx-onDurationTimer*, *drx-InactivityTimer*. The DRX parameters that are common to the DRX groups are: *drx-SlotOffset*, *drx-RetransmissionTimerDL*, *drx-RetransmissionTimerUL*, *drx-LongCycleStartOffset*, *drx-NonIntegerLongCycleStartOffset*, *drx-ShortCycle* (optional), *drx-NonIntegerShortCycle* (optional), *drx-ShortCycleTimer* (optional), *drx-HARQ-RTT-TimerDL*, and *drx-HARQ-RTT-TimerUL*.

When DRX is configured, the Active Time for Serving Cells in a DRX group includes the time while:

- *drx-onDurationTimer* or *drx-InactivityTimer* configured for the DRX group is running; or

- *drx-RetransmissionTimerDL*, *drx-RetransmissionTimerUL* or *drx-RetransmissionTimerSL* is running on any Serving Cell in the DRX group; or

- *ra-ContentionResolutionTimer* (as described in clause 5.1.5) or *msgB-ResponseWindow* (as described in clause 5.1.4a) is running; or

- a Scheduling Request is sent on PUCCH and is pending (as described in clause 5.4.4 or 5.22.1.5). If this Serving Cell is part of a non-terrestrial network, the Active Time is started after the Scheduling Request transmission that is performed when the *SR\_COUNTER* is 0 for all the SR configurations with pending SR(s) plus the UE-gNB RTT; or

- a PDCCH indicating a new transmission addressed to the C-RNTI of the MAC entity has not been received after successful reception of a Random Access Response for the Random Access Preamble not selected by the MAC entity among the contention-based Random Access Preamble (as described in clauses 5.1.4 and 5.1.4a); or

- there is an ongoing RACH-less LTM cell switch; or

- there is an ongoing RACH-less handover in a terrestrial network.

The following MAC timers are used for DRX operation in a non-terrestrial network:

- *HARQ-RTT-TimerDL-NTN* (per DL HARQ process configured with HARQ feedback enabled): the minimum duration before a DL assignment for HARQ retransmission is expected by the MAC entity;

- *HARQ-RTT-TimerUL-NTN* (per UL HARQ process configured with *HARQModeA*): the minimum duration before a UL HARQ retransmission grant is expected by the MAC entity.

When DRX is not configured and multicast DRX is configured for a G-RNTI or G-CS-RNTI, the MAC entity shall:

1> monitor the PDCCH as specified in TS 38.213 [6];

1> if a MAC PDU is received in a configured downlink assignment for unicast; or

1> if the PDCCH indicates a DL unicast transmission:

2> stop the *drx-RetransmissionTimerDL-PTM* for the corresponding HARQ process.

When DRX is configured, the MAC entity shall:

1> if a MAC PDU is received in a configured downlink assignment for unicast:

2> if this Serving Cell is configured with *downlinkHARQ-FeedbackDisabled*:

3> if the corresponding HARQ process is configured with HARQ feedback enabled:

4> set *HARQ-RTT-TimerDL-NTN* for the corresponding HARQ process equal to *drx-HARQ-RTT-TimerDL* plus the latest available UE-gNB RTT value;

4> start the *HARQ-RTT-TimerDL-NTN* for the corresponding HARQ process in the first symbol after the end of the corresponding transmission carrying the DL HARQ feedback.

2> else:

3> start the *drx-HARQ-RTT-TimerDL* for the corresponding HARQ process in the first symbol after the end of the corresponding transmission carrying the DL HARQ feedback.

NOTE 1a: Void.

NOTE 1b: Void.

2> stop the *drx-RetransmissionTimerDL* for the corresponding HARQ process;

2> stop the *drx-RetransmissionTimerDL-PTM* for the corresponding HARQ process.

1> if a MAC PDU is transmitted in a configured uplink grant and LBT failure indication is not received from lower layers:

2> if this Serving Cell is configured with *uplinkHARQ-Mode*:

3> if the corresponding HARQ process is configured as *HARQModeA*:

4> set *HARQ-RTT-TimerUL-NTN* for the corresponding HARQ process equal to *drx-HARQ-RTT-TimerUL* plus the latest available UE-gNB RTT value;

4> if *drx-LastTransmissionUL* is configured:

5> start the *HARQ-RTT-TimerUL-NTN* for the corresponding HARQ process in the first symbol after the end of the last transmission (within a bundle) of the corresponding PUSCH transmission.

4> else:

5> start the *HARQ-RTT-TimerUL-NTN* for the corresponding HARQ process in the first symbol after the end of the first transmission (within a bundle) of the corresponding PUSCH transmission.

2> else:

3> if *disableCG-RetransmissionMonitoring* is not configured for the configured uplink grant:

4> if *drx-LastTransmissionUL* is configured:

5> start the *drx-HARQ-RTT-TimerUL* for the corresponding HARQ process in the first symbol after the end of the last transmission (within a bundle) of the corresponding PUSCH transmission.

4> else:

5> start the *drx-HARQ-RTT-TimerUL* for the corresponding HARQ process in the first symbol after the end of the first transmission (within a bundle) of the corresponding PUSCH transmission.

2> stop the *drx-RetransmissionTimerUL* for the corresponding HARQ process at the first transmission (within a bundle) of the corresponding PUSCH transmission.

1> if a MAC PDU is transmitted in a configured sidelink grant:

2> if the PUCCH resource is configured:

3> start the *drx-HARQ-RTT-TimerSL* for the corresponding HARQ process in the first symbol after the end of the corresponding PUCCH transmission carrying the SL HARQ feedback; or

3> start the *drx-HARQ-RTT-TimerSL* for the corresponding HARQ process in the first symbol after the end of the corresponding PUCCH resource for the SL HARQ feedback when the PUCCH is not transmitted;

3> stop the *drx-RetransmissionTimerSL* for the corresponding HARQ process.

2> else:

3> start the *drx-HARQ-RTT-TimerSL* for the corresponding HARQ process at the first symbol after the end of the corresponding PSSCH transmission;

3> stop the *drx-RetransmissionTimerSL* for the corresponding HARQ process.

1> if a *drx-HARQ-RTT-TimerDL* expires:

2> if the data of the corresponding HARQ process was not successfully decoded:

3> start the *drx-RetransmissionTimerDL* for the corresponding HARQ process in the first symbol after the expiry of *drx-HARQ-RTT-TimerDL*.

1> if a *HARQ-RTT-TimerDL-NTN* expires:

2> if the data of the corresponding HARQ process was not successfully decoded:

3> start the *drx-RetransmissionTimerDL* for the corresponding HARQ process in the first symbol after the expiry of *HARQ-RTT-TimerDL-NTN*.

1> if a *drx-HARQ-RTT-TimerUL* expires:

2> start the *drx-RetransmissionTimerUL* for the corresponding HARQ process in the first symbol after the expiry of *drx-HARQ-RTT-TimerUL*.

1> if a *HARQ-RTT-TimerUL-NTN* expires:

2> start the *drx-RetransmissionTimerUL* for the corresponding HARQ process in the first symbol after the expiry of *HARQ-RTT-TimerUL-NTN*.

1> if a *drx-HARQ-RTT-TimerSL* expires:

2> if a HARQ NACK feedback for the corresponding HARQ process is transmitted on PUCCH; or

2> if a HARQ NACK feedback for the corresponding HARQ process is generated but not transmitted on PUCCH; or

2> if the PUCCH resource is not configured for the SL grant:

3> start the *drx-RetransmissionTimerSL* for the corresponding HARQ process in the first symbol after the expiry of *drx-HARQ-RTT-TimerSL*.

NOTE 1c: The UE handles the *drx-RetransmissionTimerSL* operation when *sl-PUCCH-Config* is configured by RRC but PUCCH resource is not scheduled same as when *sl-PUCCH-Config* is not configured.

1> if a DRX Command MAC CE indicated by PDCCH addressed to C-RNTI or CS-RNTI, or by a configured downlink assignment for unicast transmission or a Long DRX Command MAC CE is received:

2> stop *drx-onDurationTimer* for each DRX group;

2> stop *drx-InactivityTimer* for each DRX group.

1> if *drx-InactivityTimer* for a DRX group expires:

2> if the Short DRX cycle is configured:

3> start or restart *drx-ShortCycleTimer* for this DRX group in the first symbol after the expiry of *drx-InactivityTimer*;

3> use the Short DRX cycle for this DRX group.

2> else:

3> use the Long DRX cycle for this DRX group.

1> if a DRX Command MAC CE indicated by PDCCH addressed to C-RNTI or CS-RNTI, or by a configured downlink assignment for unicast transmission is received:

2> if the Short DRX cycle is configured:

3> start or restart *drx-ShortCycleTimer* for each DRX group in the first symbol after the end of DRX Command MAC CE reception;

3> use the Short DRX cycle for each DRX group.

2> else:

3> use the Long DRX cycle for each DRX group.

1> if *drx-ShortCycleTimer* for a DRX group expires:

2> use the Long DRX cycle for this DRX group.

1> if a Long DRX Command MAC CE is received:

2> stop *drx-ShortCycleTimer* for each DRX group;

2> use the Long DRX cycle for each DRX group.

1> if the *drx-NonIntegerLongCycleStartOffset* is configured:

2> increment *DRX\_SFN\_COUNTER* by 1 in the first symbol of a slot in which SFN changes to 0;

2> if DRX is (re-)configured by RRC:

3> if *drx-TimeReferenceSFN* is included in the RRC (re-)configuration which is received during the first half of a hyper frame (i.e., SFN is between 0 and 511):

4> set *DRX\_SFN\_COUNTER* to 1.

3> else:

4> set *DRX\_SFN\_COUNTER* to 0.

1> if the Short DRX cycle is used for a DRX group and the *drx-NonIntegerShortCycle* is not configured, and [(SFN × 10) + subframe number] modulo (*drx-ShortCycle*) = (*drx-StartOffset*) modulo (*drx-ShortCycle*); or

1> if the Short DRX cycle is used for a DRX group and the *drx-NonIntegerShortCycle* is configured, and floor([(*DRX\_SFN\_COUNTER* × 10240) + (SFN × 10) + subframe number − *drx-StartOffset*] modulo (*drx-NonIntegerShortCycle*)) = 0:

2> start *drx-onDurationTimer* for this DRX group after *drx-SlotOffset* from the beginning of the subframe.

1> if the Long DRX cycle is used for a DRX group and the *drx-NonIntegerLongCycleStartOffset* is not configured, and [(SFN × 10) + subframe number] modulo (*drx-LongCycle*) = *drx-StartOffset*; or

1> if the Long DRX cycle is used for a DRX group and the *drx-NonIntegerLongCycleStartOffset* is configured, and floor([(*DRX\_SFN\_COUNTER* × 10240) + (SFN × 10) + subframe number] modulo (*drx-NonIntegerLongCycle*)) = *drx-StartOffset*:

2> if DCP monitoring is configured for the active DL BWP as specified in TS 38.213 [6], clause 10.3:

3> if DCP indication associated with the current DRX cycle received from lower layer indicated to start *drx-onDurationTimer*, as specified in TS 38.213 [6]; or

3> if all DCP occasion(s) in time domain, as specified in TS 38.213 [6], associated with the current DRX cycle occurred in Active Time considering grants/assignments/DRX Command MAC CE/Long DRX Command MAC CE received and Scheduling Request sent until 4 ms prior to start of the last DCP occasion, or during a measurement gap, or when the MAC entity monitors for a PDCCH transmission on the search space indicated by *recoverySearchSpaceId* of the SpCell identified by the C-RNTI while the *ra-ResponseWindow* is running (as specified in clause 5.1.4); or

3> if *ps-Wakeup* is configured with value *true* and DCP indication associated with the current DRX cycle has not been received from lower layers:

4> start *drx-onDurationTimer* after *drx-SlotOffset* from the beginning of the subframe.

2> else:

3> start *drx-onDurationTimer* for this DRX group after *drx-SlotOffset* from the beginning of the subframe.

NOTE 2: In case of unaligned SFN across carriers in a cell group, the SFN of the SpCell is used to calculate the DRX duration.

1> if a DRX group is in Active Time:

2> monitor the PDCCH on the Serving Cells in this DRX group as specified in TS 38.213 [6];

2> if the PDCCH indicates a DL transmission; or

2> if the PDCCH indicates a one-shot HARQ feedback as specified in clause 9.1.4 of TS 38.213 [6]; or

2> if the PDCCH indicates a retransmission of HARQ feedback as specified in clause 9.1.5 of TS 38.213 [6]:

3> if this Serving Cell is configured with *downlinkHARQ-FeedbackDisabled*:

4> if the corresponding HARQ process is configured with HARQ feedback enabled:

5> set *HARQ-RTT-TimerDL-NTN* for the corresponding HARQ process equal to *drx-HARQ-RTT-TimerDL* plus the latest available UE-gNB RTT value;

5> start the *HARQ-RTT-TimerDL-NTN* for the corresponding HARQ process in the first symbol after the end of the corresponding transmission carrying the DL HARQ feedback.

3> else:

4> start or restart the *drx-HARQ-RTT-TimerDL* for the corresponding HARQ process(es) whose HARQ feedback is reported in the first symbol after the end of the corresponding transmission carrying the DL HARQ feedback.

NOTE 3: When HARQ feedback is postponed by PDSCH-to-HARQ\_feedback timing indicating an inapplicable k1 value, as specified in TS 38.213 [6], the corresponding transmission opportunity to send the DL HARQ feedback is indicated in a later PDCCH requesting the HARQ-ACK feedback.

3> stop the *drx-RetransmissionTimerDL* for the corresponding HARQ process(es) whose HARQ feedback is reported;

3> stop the *drx-RetransmissionTimerDL-PTM* for the corresponding HARQ process;

3> if the PDSCH-to-HARQ\_feedback timing indicate an inapplicable k1 value as specified in TS 38.213 [6]:

4> start the *drx-RetransmissionTimerDL* in the first symbol after the (end of the last) PDSCH transmission (within a bundle) for the corresponding HARQ process.

2> if the PDCCH indicates a UL transmission:

3> if this Serving Cell is configured with *uplinkHARQ-Mode*:

4> if the corresponding HARQ process is configured as *HARQModeA*:

5> set *HARQ-RTT-TimerUL-NTN* for the corresponding HARQ process equal to *drx-HARQ-RTT-TimerUL* plus the latest available UE-gNB RTT value;

5> if *drx-LastTransmissionUL* is configured:

6> start the *HARQ-RTT-TimerUL-NTN* for the corresponding HARQ process in the first symbol after the end of the last transmission (within a bundle) of the corresponding PUSCH transmission.

5> else:

6> start the *HARQ-RTT-TimerUL-NTN* for the corresponding HARQ process in the first symbol after the end of the first transmission (within a bundle) of the corresponding PUSCH transmission.

3> else:

4> if *drx-LastTransmissionUL* is configured:

5> start the *drx-HARQ-RTT-TimerUL* for the corresponding HARQ process in the first symbol after the end of the last transmission (within a bundle) of the corresponding PUSCH transmission.

4> else:

5> start the *drx-HARQ-RTT-TimerUL* for the corresponding HARQ process in the first symbol after the end of the first transmission (within a bundle) of the corresponding PUSCH transmission.

3> stop the *drx-RetransmissionTimerUL* for the corresponding HARQ process.

2> if the PDCCH indicates an SL transmission:

3> if the PUCCH resource is configured:

4> start the *drx-HARQ-RTT-TimerSL* for the corresponding HARQ process in the first symbol after the end of the corresponding PUCCH transmission carrying the SL HARQ feedback; or

4> start the *drx-HARQ-RTT-TimerSL* for the corresponding HARQ process in the first symbol after the end of the corresponding PUCCH resource for the SL HARQ feedback when the PUCCH is not transmitted;

4> stop the *drx-RetransmissionTimerSL* for the corresponding HARQ process.

3> else:

4> start the *drx-HARQ-RTT-TimerSL* for the corresponding HARQ process at the first symbol after end of PDCCH occasion;

4> stop the *drx-RetransmissionTimerSL* for the corresponding HARQ process.

2> if the PDCCH indicates a new transmission (DL, UL or SL) on a Serving Cell in this DRX group:

3> start or restart *drx-InactivityTimer* for this DRX group in the first symbol after the end of the PDCCH reception.

NOTE 3a: A PDCCH indicating activation of SPS, configured grant type 2, or configured sidelink grant of configured grant Type 2 is considered to indicate a new transmission.

NOTE 3b: If the PDCCH reception includes two PDCCH candidates from corresponding search spaces, as described in clause 10.1 in 38.213, start or restart *drx-InactivityTimer* for this DRX group in the first symbol after the end of the PDCCH candidate that ends later in time.

2> if a HARQ process receives downlink feedback information and acknowledgement is indicated:

3> stop the *drx-RetransmissionTimerUL* for the corresponding HARQ process.

1> if DCP monitoring is configured for the active DL BWP as specified in TS 38.213 [6], clause 10.3; and

1> if the current symbol n occurs within *drx-onDurationTimer* duration; and

1> if *drx-onDurationTimer* associated with the current DRX cycle is not started as specified in this clause:

2> if the MAC entity would not be in Active Time considering grants/assignments/DRX Command MAC CE/Long DRX Command MAC CE received and Scheduling Request sent until 4 ms prior to symbol n when evaluating all DRX Active Time conditions as specified in this clause; and

2> if *allowCSI-SRS-Tx-MulticastDRX-Active* is not configured, or if *cfr-ConfigMulticast* is not configured for any of the active BWP(s) of the Serving Cell(s), or if all multicast DRXes would not be in Active Time considering multicast assignments/DRX Command MAC CE for MBS multicast received until 4 ms prior to symbol n when evaluating all DRX Active Time conditions as specified in Clause 5.7b and all multicast sessions are configured with multicast DRX:

3> not transmit periodic SRS and semi-persistent SRS defined in TS 38.214 [7];

3> not report semi-persistent CSI configured on PUSCH;

3> not report semi-persistent CSI on PUCCH;

3> if *ps-TransmitPeriodicL1-RSRP* is not configured with value *true*:

4> not report periodic CSI that is L1-RSRP on PUCCH.

3> if *ps-TransmitOtherPeriodicCSI* is not configured with value *true*:

4> not report periodic CSI that is not L1-RSRP on PUCCH.

1> else:

2> in current symbol n, if a DRX group would not be in Active Time considering grants/assignments scheduled on Serving Cell(s) in this DRX group and DRX Command MAC CE/Long DRX Command MAC CE received and Scheduling Request sent until 4 ms prior to symbol n when evaluating all DRX Active Time conditions as specified in this clause; and

2> if *allowCSI-SRS-Tx-MulticastDRX-Active* is not configured, or if *cfr-ConfigMulticast* is not configured for any of the active BWP(s) of the Serving Cell(s), or, in current symbol n, if all multicast DRXes corresponding to the DRX group would not be in Active Time considering multicast assignments/DRX Command MAC CE for MBS multicast received until 4 ms prior to symbol n when evaluating all DRX Active Time conditions as specified in Clause 5.7b and all multicast sessions corresponding to the DRX group are configured with multicast DRX:

3> not transmit periodic SRS and semi-persistent SRS defined in TS 38.214 [7] in this DRX group;

3> not report CSI on PUCCH and semi-persistent CSI configured on PUSCH in this DRX group.

2> if CSI masking (*csi-Mask*) is setup by upper layers:

3> in current symbol n, if *drx-onDurationTimer* of a DRX group would not be running considering grants/assignments scheduled on Serving Cell(s) in this DRX group and DRX Command MAC CE/Long DRX Command MAC CE received until 4 ms prior to symbol n when evaluating all DRX Active Time conditions as specified in this clause; and

3> if *allowCSI-SRS-Tx-MulticastDRX-Active* is not configured, or if *cfr-ConfigMulticast* is not configured for any of the active BWP(s) of the Serving Cell(s), or, in current symbol n, if *drx-onDurationTimerPTM(s)* of all multicast DRXes corresponding to the DRX group would not be running considering DRX Command MAC CE for MBS multicast received until 4 ms prior to symbol n when evaluating all DRX Active Time conditions as specified in Clause 5.7b and all multicast sessions corresponding to the DRX group are configured with multicast DRX:

4> not report CSI on PUCCH in this DRX group.

NOTE 4: If a UE multiplexes a CSI configured on PUCCH with other overlapping UCI(s) according to the procedure specified in TS 38.213 [6] clause 9.2.5 and this CSI multiplexed with other UCI(s) would be reported on a PUCCH resource either outside DRX Active Time of the DRX group in which this PUCCH is configured or outside the on-duration period of the DRX group in which this PUCCH is configured if CSI masking is setup by upper layers, it is up to UE implementation whether to report this CSI multiplexed with other UCI(s).

The MAC entity shall ensure no rounding error is generated when performing the modulus operation with *drx-NonIntegerShortCycle* or *drx-NonIntegerLongCycle* as the divisor.

Regardless of whether the MAC entity is monitoring PDCCH or not on the Serving Cells in a DRX group, the MAC entity transmits HARQ feedback, aperiodic CSI on PUSCH, and aperiodic SRS defined in TS 38.214 [7] on the Serving Cells in the DRX group when such is expected.

The MAC entity needs not to monitor the PDCCH if it is not a complete PDCCH occasion (e.g. the Active Time starts or ends in the middle of a PDCCH occasion).

When *drx-LastTransmissionUL* is configured, *drx-HARQ-RTT-TimerUL* or *HARQ-RTT-TimerUL-NTN* is started after the last PUSCH transmission occasion of a bundle regardless of whether that last PUSCH transmission occasion is used for a PUSCH transmission for that bundle or not.

==================================NEXT CHANGE=====================================

### 5.8.3 Sidelink

There are two types of transmission without dynamic sidelink grant:

- configured grant Type 1 where an sidelink grant is provided by RRC, and stored as configured sidelink grant;

- configured grant Type 2 where an sidelink grant is provided by PDCCH, and stored or cleared as configured sidelink grant based on L1 signalling indicating configured sidelink grant activation or deactivation.

Type 1 and/or Type 2 are configured with a single BWP. Multiple configurations of up to 8 configured grants (including both Type 1 and Type 2, if configured) can be active simultaneously on the BWP.

RRC configures the following parameters when the configured grant Type 1 is configured, as specified in TS 38.331 [5] or TS 36.331 [21]:

- *sl-ConfigIndexCG*/*sl-PRS-ConfigIndexCG*: the identifier of a configured grant for sidelink;

- *sl-CS-RNTI*: SL-CS-RNTI for retransmission;

- *sl-NrOfHARQ-Processes*: the number of HARQ processes for configured grant;

- *sl-PeriodCG/sl-PRS-PeriodCG*: periodicity of the configured grant Type 1;

- *sl-TimeOffsetCG-Type1*: Offset of a resource with respect to reference logical slot defined by *sl-TimeReferenceSFN-Type1* in time domain, referring to the number of logical slots in a resource pool;

- *sl-TimeResourceCG-Type1*: time resource location of the configured grant Type 1;

- *sl-CG-MaxTransNumList*: the maximum number of times that a TB can be transmitted using the configured grant;

*- sl-HARQ-ProcID-offset*: offset of HARQ process for configured grant Type 1;

- *sl-PRS-ResourceID*: SL-PRS configuration index for configured grant Type 1;

- *sl-TimeReferenceSFN-Type1*: SFN used for determination of the offset of a resource in time domain. If it is present, the UE uses the first logical slot of associated resource pool after the starting time of the closest SFN with the indicated number preceding the reception of the sidelink configured grant configuration Type 1 as reference logical slot. If it is absent, the indicated reference SFN is zero.

RRC configures the following parameters when the configured grant Type 2 is configured, as specified in TS 38.331 [5]:

- *sl-ConfigIndexCG*/*sl-PRS-ConfigIndexCG*: the identifier of a configured grant for sidelink;

- *sl-CS-RNTI*: SL-CS-RNTI for activation, deactivation, and retransmission;

- *sl-PRS-CS-RNTI*: SL-PRS-CS-RNTI for activation, and deactivation;

- *sl-NrOfHARQ-Processes*: the number of HARQ processes for configured grant;

- *sl-PeriodCG/sl-PRS-PeriodCG*: periodicity of the configured grant Type 2;

- *sl-CG-MaxTransNumList*: the maximum number of times that a TB can be transmitted using the configured grant;

*- sl-HARQ-ProcID-offset*: offset of HARQ process for configured grant Type 2.

Upon configuration of a configured grant Type 1, the MAC entity shall for each configured sidelink grant:

1> store the sidelink grant provided by RRC as a configured sidelink grant;

1> initialise or re-initialise the configured sidelink grant to determine PSCCH duration(s) and PSSCH duration(s) and SL-PRS transmission occasion(s) according to *sl-TimeOffsetCG-Type1* and *sl-TimeResourceCG-Type1*, and to reoccur with *sl-periodCG* for transmissions of multiple MAC PDUs and SL-PRS(s) according to clause 8.1.2 of TS 38.214 [7].

NOTE 1: If the MAC entity is configured with multiple configured sidelink grants, collision among the configured sidelink grants may occur. How to handle the collision is left to UE implementation.

After a sidelink grant is configured for a configured grant Type 1, the MAC entity shall consider sequentially that the first slot of the Sth sidelink grant occurs in the logical slot for which:

 CURRENT\_slot = (*sl-ReferenceSlotCG-Type1* + *sl-TimeOffsetCG-Type1* + S × *PeriodicitySL*) modulo T'max

where CURRENT\_slot refers to current logical slot in the associated resource pool,$ PeriodicitySL=\left⌈\frac{T'\_{max} }{10240 ms}×sl-PeriodCG or or sl-PRS-PeriodCG\right⌉$and T'max is the number of slots that belongs to the associated resource pool as defined in clause 8 of TS 38.214[7]. *sl-ReferenceSlotCG-Type1* refers to reference logical slot defined by *sl-TimeReferenceSFN-Type1*.

After a sidelink grant is configured for a configured grant Type 2, the MAC entity shall consider sequentially that the first slot of Sth sidelink grant occurs in the logical slot for which:

 CURRENT\_slot = (*sl-StartSlotCG-Type2* + S × *PeriodicitySL*) modulo T'max

where *sl-StartSlotCG-Type2* refers to the logical slot of the first transmission opportunity of PSSCH or SL-PRS where the configured sidelink grant was (re)initialised.

When a configured sidelink grant is released by RRC, all the corresponding configurations shall be released and all corresponding sidelink grants shall be cleared.

The MAC entity shall:

1> if the configured sidelink grant confirmation has been triggered and not cancelled; and

1> if the MAC entity has UL resources allocated for new transmission:

2> instruct the Multiplexing and Assembly procedure to generate a Sidelink Configured Grant Confirmation MAC CE as defined in clause 6.1.3.34;

2> cancel the triggered configured sidelink grant confirmation.

For a configured grant Type 2, the MAC entity shall clear the corresponding configured sidelink grant immediately after first transmission of Sidelink Configured Grant Confirmation MAC CE triggered by the configured sidelink grant deactivation.

====================================NEXT CHANGE ====================================

## 5.22 SL-SCH Data transfer and SL-PRS transmission

### 5.22.1 SL-SCH Data and SL-PRS transmission

#### 5.22.1.1 SL Grant reception and SCI transmission

Sidelink grant is received dynamically on the PDCCH, configured semi-persistently by RRC or autonomously selected by the MAC entity. The MAC entity may have a sidelink grant on an active SL BWP to determine a set of PSCCH duration(s) in which transmission of SCI occurs and a set of PSSCH duration(s) in which transmission of SL-SCH associated with the SCI occurs. The MAC entity may have a sidelink grant on the Shared SL-PRS resource pool of an active BWP to determine a set of PSCCH durations(s) in which transmission of SCI occurs and a set of SL-PRS transmission occasion(s) and PSSCH duration(s) in which transmission of SL-PRS and SL-SCH associated with the SCI occur. The MAC entity may have a sidelink grant on the Dedicated SL-PRS resource pool of an active BWP to determine a set of PSCCH duration(s) in which transmission of SCI occurs and a set of SL-PRS transmission occasion(s) in which transmission of SL-PRS associated to the SCI occurs. A sidelink grant addressed to SL-CS-RNTI with NDI = 1 is considered as a dynamic sidelink grant. A sidelink grant addressed to SL-PRS-CS-RNTI with Activation/Release indication = 1 as in clause 7.3.1.4.3 in TS 38.212 [9] is considered as a dynamic sidelink grant*.*

If the MAC entity has been configured with Sidelink resource allocation mode 1 as indicated in TS 38.331 [5] or if the MAC entity has been configured with Sidelink resource allocation scheme 1 as indicated in TS 38.331 [5] and PDCCH is received for resource allocation on Shared SL-PRS resource pool, the MAC entity shall for each PDCCH occasion and for each grant received for this PDCCH occasion:

1> if a sidelink grant has been received on the PDCCH for the MAC entity's SL-RNTI:

2> if the NDI received on the PDCCH has not been toggled compared to the value in the previously received HARQ information for the HARQ Process ID:

3> use the received sidelink grant to determine PSCCH duration(s) and PSSCH duration(s) and SL-PRS transmission occasion(s), if available, for one or more retransmissions of a single MAC PDU for the corresponding Sidelink process according to clause 8.1.2 of TS 38.214 [7] and SL-PRS according to clause 8.1.4 of TS 38.214 [7].

2> else:

3> use the received sidelink grant to determine PSCCH duration(s) and PSSCH duration(s) and SL-PRS transmission occasion(s), if available, for initial transmission and, if available, retransmission(s) of a single MAC PDU and SL-PRS according to clause 8.1.2 of TS 38.214 [7].

NOTE 0: When SL-PRS is transmitted on Shared SL-PRS resource pool, the PSSCH duration(s) and SL-PRS transmission occasion(s) are determined only after the LCP procedure in clause 5.22.1.4.1.

1> else if a sidelink grant has been received on the PDCCH for the MAC entity's SL-CS-RNTI:

2> if PDCCH contents indicate retransmission(s) for the identified HARQ process ID that has been set for an activated configured sidelink grant identified by *sl-ConfigIndexCG*:

3> use the received sidelink grant to determine PSCCH duration(s) and PSSCH duration(s) and SL-PRS transmission occasion(s), if available, for one or more retransmissions of a single MAC PDU and SL-PRS according to clause 8.1.2 of TS 38.214 [7].

2> else if PDCCH contents indicate configured grant Type 2 deactivation for a configured sidelink grant:

3> trigger configured sidelink grant confirmation for the configured sidelink grant.

2> else if PDCCH contents indicate configured grant Type 2 activation for a configured sidelink grant:

3> trigger configured sidelink grant confirmation for the configured sidelink grant;

3> store the configured sidelink grant;

3> initialise or re-initialise the configured sidelink grant to determine the set of PSCCH durations and the set of PSSCH durations for transmissions of multiple MAC PDUs according to clause 8.1.2 of TS 38.214 [7] and the set of SL-PRS transmission occasions for transmission of multiple SL-PRS according to clause of 8.2.4 of TS 38.214 [7], if available.

1> if a dynamic sidelink grant is available for retransmission(s) of a MAC PDU which has been positively acknowledged as specified in clause 5.22.1.3.1a:

2> clear the PSCCH duration(s) and PSSCH duration(s) corresponding to retransmission(s) of the MAC PDU from the sidelink grant.

If the MAC entity has been configured with Sidelink resource allocation scheme 1 as in TS 38.331 [5] and PDCCH is received for resource allocation on Dedicated SL-PRS resource pool, the MAC entity shall for each PDCCH occasion:

1> if a sidelink grant has been received on the PDCCH for the MAC entity's SL-PRS-RNTI: (i.e., dynamic grant)

2> use the received sidelink grant to determine the PSCCH duration(s) and the corresponding SL-PRS occasion(s) for the transmission of SL-PRS.

1> else if a sidelink grant has been received on the PDCCH for MAC entity's SL-PRS-CS-RNTI: (i.e., configured sidelink grant type 2)

2> if the PDCCH content indicates the configured grant Type 2 activation for a configured sidelink grant:

3> store the configured sidelink grant;

3> trigger configured grant confirmation for the configured sidelink grant;

3> initialise or re-initialise the configured sidelink grant to determine the set of PSCCH duration(s) and the corresponding SL-PRS occasion for the transmission of SL-PRS.

2> else if the PDCCH content indicates the configured Type 2 deactivation for a configured sidelink grant:

3> trigger configured grant confirmation for the configured sidelink grant.

If the MAC entity has been configured with Sidelink resource allocation mode 2 to transmit or Sidelink resource allocation scheme 2 using pool(s) of resources in one carrier as indicated in TS 38.331 [5] or TS 36.331 [21] based on full sensing, or partial sensing, or random selection or any combination(s); Or if the MAC entity has been configured with Sidelink resource allocation mode 2 to transmit using pool(s) of resources in multiple carriers as indicated in TS 38.331 [5] based on full sensing, or partial sensing, or random selection or any combination(s), the MAC entity shall for each Sidelink process:

NOTE 0A: For SL-PRS transmission by Sidelink resource allocation scheme 2 on Dedicated SL-PRS resource pool, partial sensing is not supported.

NOTE 1: If the MAC entity is configured with Sidelink resource allocation mode 2 or Sidelink resource allocation scheme 2 to transmit using a pool of resources in one carrier as indicated in TS 38.331 [5] or TS 36.331 [21]; Or if the MAC entity is configured with Sidelink resource allocation mode 2 transmit using pools of resources in multiple carriers as indicated in TS 38.331 [5], the MAC entity can create a selected sidelink grant on the pool of resources based on random selection, or partial sensing, or full sensing only after releasing configured sidelink grant(s), if any.

NOTE 2: For each carrier configured by upper layers associated with the concerned sidelink logical channel, the MAC entity expects that PSFCH is always configured by RRC for at least one pool of resources in *sl-TxPoolSelectedNormal* and for the resource pool in *sl-TxPoolExceptional* in case that at least a logical channel configured with *sl-HARQ-FeedbackEnabled* is set to *enabled*.

NOTE 2A: For the transmission of Sidelink Inter-UE Coordination Request MAC CE, the MAC entity selects the TX pool of resource where the IUC resource set is required. For the transmission of Sidelink Inter-UE Coordination Information MAC CE, the MAC entity selects the TX pool of resource where the IUC resource set is located.

NOTE 2B: For dynamic co-channel coexistence of LTE sidelink and NR sidelink, when the same TB or different TBs are transmitted on the NR SL slots overlapping with the LTE SL subframe, it is up to UE implementation how to avoid transmitting NR PSCCH/PSSCH only in the subsequent NR SL slot overlapping with an LTE SL subframe for NR PSCCH/PSSCH transmissions of 30kHz SCS.

1> if the MAC entity has selected to create a selected sidelink grant corresponding to transmissions of multiple MAC PDUs, and SL data is available in a logical channel; or

1> if the MAC entity has selected to create a selected sidelink grant corresponding to transmission(s) of multiple SL-PRS(s), which have been triggered by the upper layer or by the reception of a SCI from a peer UE:

NOTE 2B1: The multiplicity/singularity of SL-PRS transmission and the reservation period for multiple SL-PRS transmission is determined by the UE's own upper layers by implementation within the service layer requirement for the Ranging/Sidelink positioning.

2> if the MAC entity has not selected a pool of resources allowed for the logical channel or SL-PRS transmission:

3> if single carrier frequency is configured:

4> if SL data is available in the logical channel for NR sidelink discovery:

5> if *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon* is configured according to TS 38.331 [5]:

6> select the *sl-DiscTxPoolSelected* configured in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon* for the transmission of NR sidelink discovery message.

5> else:

6> select any pool of resources among the configured pools of resources except for Dedicated SL-PRS resource pool, if configured.

4> else if SL data is available in the logical channel for BRID for A2X communication:

5> if *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X* is configured according to TS 38.331 [5]:

6> if resource pool(s) is configured with *sl-A2X-Service* indicating *brid* or *bridAndDAA*:

7> select any pool of resources among the resource pool(s) configured with *sl-A2X-Service* indicating *brid* or *bridAndDAA* in *sl-TxPoolSelectedNormal* configured in *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X* for the transmission of SL data for A2X communication.

6> else:

7> select any pool of resources among the configured pools of resources except the pool(s) in *sl-BWP-PoolConfigA2X*, *sl-BWP-PoolConfigCommonA2X*, *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured or Dedicated SL-PRS resource pool, if configured.

5> else:

6> select any pool of resources among the configured pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured or Dedicated SL-PRS resource pool, if configured.

4> else if SL data is available in the logical channel for DAA for A2X communication:

5> if *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X* is configured according to TS 38.331 [5]:

6> if resource pool(s) is configured with *sl-A2X-Service* indicating *daa* or *bridAndDAA*:

7> select any pool of resources among the resource pool(s) configured with *sl-A2X-Service* indicating *daa* or *bridAndDAA* in *sl-TxPoolSelectedNormal* configured in *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X* for the transmission of SL data for A2X communication.

6> else:

7> select any pool of resources among the configured pools of resources except the pool(s) in *sl-BWP-PoolConfigA2X*, *sl-BWP-PoolConfigCommonA2X*, *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured or Dedicated SL-PRS resource pool, if configured.

5> else:

6> select any pool of resources among the configured pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured or Dedicated SL-PRS resource pool, if configured.

NOTE 2C: The MAC entity identifies the logical channel(s) for BRID or DAA based on the QoS information associated to BRID or DAA, i.e. PQI(s), from upper layers.

4> else if *sl-HARQ-FeedbackEnabled* is set to *enabled* for the logical channel:

5> select any pool of resources configured with PSFCH resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig*, *sl-BWP-DiscPoolConfigCommon*, *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X*, if configured or Dedicated SL-PRS resource pool, if configured.

4> else if SL-PRS is pending for transmission:

5> select any resource pool among the resource pool(s) allowing for SL-PRS transmission.

4> else:

5> select any pool of resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig*, *sl-BWP-DiscPoolConfigCommon*, *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X*, if configured or Dedicated SL-PRS resource pool, if configured.

3> else (i.e. multiple carrier frequencies are configured):

4> trigger the TX carrier (re-)selection procedure as specified in clause 5.22.1.11.

2> if Sidelink consistent LBT failure is detected as specified in clause 5.31.2 in all RB sets of the selected resource pool, if single carrier frequency is configured:

3> if *sl-HARQ-FeedbackEnabled* is set to *enabled* for the logical channel:

4> select any pool of resources configured with PSFCH resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured and the pool(s) in which all RB sets had Sidelink consistent LBT failure detected and not cancelled.

3> else:

4> select any pool of resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured and the pool(s) in which all RB sets had Sidelink consistent LBT failure detected and not cancelled.

2> perform the TX resource (re-)selection check on the selected pool of resources as specified in clause 5.22.1.2;

NOTE 2D: It is up to UE implementation how to select a resource pool that has at least one RB set in which Sidelink consistent LBT failure was either not detected or detected but cancelled.

NOTE 3: The MAC entity continuously performs the TX resource (re-)selection check until the corresponding pool of resources is released by RRC or the MAC entity decides to cancel creating a selected sidelink grant corresponding to transmissions of multiple MAC PDUs.

2> if the TX resource (re-)selection is triggered as the result of the TX resource (re-)selection check:

3> if *sl-lbt-FailureRecoveryConfig* is configured in the SL BWP:

4> indicate to the physical layer RB set information for which Sidelink consistent LBT failure was detected and not cancelled as specified in clause 5.31.2.

3> if the TX carrier (re-)selection procedure was triggered in above and one or more carriers have been (re-)selected in the TX carrier (re-)selection according to clause 5.22.1.11:

4> determine the order of the (re-)selected carriers, according to the decreasing order based on the highest priority of logical channels which are allowed on each (re-)selected carrier, and perform the resource selection procedure as specified in this clause for each Sidelink process on each (re-)selected carrier according to the order.

3> if one or multiple SL DRX(s) is configured in the destination UE(s) receiving SL-SCH data:

4> indicate to the physical layer SL DRX Active time in the destination UE(s) receiving SL-SCH data, as specified in clause 5.28.2.

NOTE 3A: The MAC entity selects a value for the resource reservation interval which is larger than the remaining PDB of SL data available in the logical channel or remaining SL-PRS delay budget. The value of the SL-PRS delay budget is provided by the UE's own upper layers by implementation.

3> randomly select, with equal probability, an integer value in the interval [5, 15] for the resource reservation interval higher than or equal to 100ms or in the interval $\left[5×\left⌈\frac{100}{max\left(20, P\_{rsvp\\_TX}\right)}\right⌉,15×\left⌈\frac{100}{max\left(20, P\_{rsvp\\_TX}\right)}\right⌉\right] $ for the resource reservation interval lower than 100ms and set *SL\_RESOURCE\_RESELECTION\_COUNTER* to the selected value;

3> if the selected resource pool is not Dedicated SL-PRS resource pool:

4> select one of the allowed values configured by RRC in *sl-ResourceReservePeriodList* and set the resource reservation interval, *P*rsvp\_TX, with the selected value;

4> select the number of HARQ retransmissions from the allowed numbers, if configured by RRC, in *sl-MaxTxTransNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped in *sl-MaxTxTransNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) and pending SL-PRS transmission(s), if available, allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-DefaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-DefaultCBR-PartialSensing* configured by RRC if partial sensing is selected and CBR measurement results are not available, or the corresponding *sl-DefaultCBR-RandomSelection* configured by RRC if random selection is selected and CBR measurement results are not available in case the *sl-TxPoolExceptional* is not used;

NOTE 3A0: The priority of SL-PRS is provided by the UE's own upper layers by implementation within the service layer requirement of the Ranging/Sidelink Positioning.

NOTE 3Aa: For Multi-consecutive slots transmission as specified in clause 8.1.4 of TS 38.214 [7], during resource (re)selection, leave it to UE implementation, regarding whether to calculate the number of HARQ retransmissions from the allowed numbers based on the number of MCSt transmissions, or the number of slot(s) within Multi-consecutive slots transmission.

NOTE 3Aa0: When transmission is performed on Shared SL-PRS resource pool, the selected number of HARQ retransmissions also corresponds to the number of SL-PRS transmissions.

4> select an amount of frequency resources within the range, if configured by RRC, between *sl-MinSubChannelNumPSSCH* and *sl-MaxSubchannelNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped between *sl-MinSubChannelNumPSSCH* and *sl-MaxSubchannelNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) and pending SL-PRS transmission(s), if available, allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-DefaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-DefaultCBR-PartialSensing* configured by RRC if partial sensing is selected and CBR measurement results are not available, or the corresponding *sl-DefaultCBR-RandomSelection* configured by RRC if random selection is selected and CBR measurement results are not available in case the *sl-TxPoolExceptional* is not used;

3> else if the selected resource pool is Dedicated SL-PRS resource pool:

4> select one of the allowed values configured by RRC in *sl-PRS-ResourceReservePeriodList* and set the resource reservation interval, $P\_{rsvp\\_TX}$, with the selected value;

4> select the number of SL-PRS retransmissions from the allowed numbers, if configured by RRC, in *sl-PRS-MaxNum-Transmissions* included in *sl-CBR-SL-PRS-TxConfigList*.

3> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is not configured by RRC:

4> if transmission based on random selection is configured by upper layers:

5> if the selected resource pool is not Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resource pool which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, and the pool(s) in which all RB sets had Sidelink consistent LBT failure detected and not cancelled and the resources of which the lowest sub-channel includes intra cell guard band PRBs if *sl-transmissionStructureForPSCCHandPSSCH* is set to 'contiguousRB' are excluded, if configured, according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier.

NOTE 3Ab: When there are both SL data available in the logical channel(s) and SL-PRS pending for transmission, the resources are selected based on the shorter one of the corresponding remaining PDB and the corresponding remaining SL-PRS delay budget.

5> else if the selected resource pool is Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resource pool, according to the remaining SL-PRS delay budget of the SL-PRS transmission(s).

4> else:

5> if *sl-NRPSSCH-EUTRA-ThresRSRP-List* is configured by the RRC:

6> when SCS of NR SL is (pre-)configured as *μ* = 0:

7> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier.

6> when SCS of NR SL is (pre-)configured as *μ* = 1:

7> randomly select the time and frequency resources in the first of NR SL slots overlapping with an LTE SL subframe for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier.

5> else if the selected resource pool is not Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier.

5> else if the selected resource pool is Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by physical layer as clasue 8.2.4 of TS 38.214 [7], according to the remaining SL-PRS delay budget of the SL-PRS transmission(s).

3> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and preferred resource set is not received from a UE:

4> if transmission based on random selection is configured by upper layers:

5> if the selected resource pool is not Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resource pool excluding all RB sets had Sidelink consistent LBT failure detected and not cancelled and the resources of which the lowest sub-channel includes intra cell guard band PRBs if *sl-transmissionStructureForPSCCHandPSSCH* is set to 'contiguousRB' are excluded, if configured, according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier.

5> else if the selected resource pool is Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resource pool, according to the remaining SL-PRS delay budget of the SL-PRS transmission(s).

4> else:

5> if the selected resource pool is not Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7], according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier.

5> else if the selected resource pool is Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by physical layer as clause 8.2.4 of TS 38.214 [7], according to the remaining SL-PRS delay budget of the SL-PRS transmission.

3> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and when the UE does not have its own sensing result as specified in clause 8.1.4 of TS 38.214 [7] and if a preferred resource set is received from a UE and if the selected resource pool is not Dedicated SL-PRS resource pool:

4> randomly select the time and frequency resources for one transmission opportunity from the resources belonging to the received preferred resource set for SL-SCH data to be transmitted to the UE providing the preferred resource set, according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier.

3> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and when the UE has its own sensing result as specified in clause 8.1.4 of TS 38.214 [7] and if a preferred resource set is received from a UE and if the selected resource pool is not Dedicated SL-PRS resource pool:

4> randomly select the time and frequency resources for one transmission opportunity within the intersection of the received preferred resource set and the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] for an SL-SCH data to be transmitted to the UE providing the preferred resource set, according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier.

4> if there are no resources within the intersection that can be selected as the time and frequency resources for the one transmission opportunity according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier.

5> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7], according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier.

3> use the randomly selected resource to select a set of periodic resources spaced by the resource reservation interval for transmissions of PSCCH, PSSCH and SL-PRS corresponding to the number of transmission opportunities of MAC PDUs or SL-PRSs determined in TS 38.214 [7].

3> if one or more SL-PRS retransmissions are selected and the selected resource pool is Dedicated SL-PRS resource pool:

4> randomly select the time and frequency resources for one or more transmission opportunities from the available resources, according to the selected number of retransmissions and the remaining SL-PRS delay budget and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9];

4> use the randomly selected resource to select a set of periodic resources spaced by the resource reservation interval for transmissions of PSCCH and SL-PRS corresponding to the number of retransmission opportunities of SL-PRS;

4> consider the first set of transmission opportunities as the initial transmission opportunities and the other set(s) of transmission opportunities as the retransmission opportunities;

4> consider the sets of initial transmission opportunities and retransmission opportunities as the selected sidelink grant.

3> else if one or more HARQ retransmissions are selected and the selected resource pool is not Dedicated SL-PRS resource pool:

4> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is not configured by RRC:

5> if transmission based on full sensing or partial sensing is configured by upper layers and there are available resources left in the resources indicated by the physical layer according to clause 8.1.4 of TS 38.214 [7] for more transmission opportunities; or

5> if transmission based on random selection is configured by upper layers and there are available resources left in the resource pool for more transmission opportunities:

6> if *sl-NRPSSCH-EUTRA-ThresRSRP-List* is configured by the RRC:

7> when SCS of NR SL is (pre-)configured as *μ* = 0:

8> randomly select the time and frequency resources for one or more transmission opportunities from the available resources which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, according to the amount of selected frequency resources, the selected number of HARQ retransmissions and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

7> when SCS of NR SL is (pre-)configured as *μ* = 1:

8> randomly select the time and frequency resources in the second of NR SL slots of NR SL slots overlapping with an LTE SL subframe to which the selected transmission resources belongs, or select the time and frequency resources in the first of NR SL slots overlapping with an LTE SL subframe for one or more transmission opportunities from the available resources which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, according to the amount of selected frequency resources, the selected number of HARQ retransmissions and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

6> else:

7> randomly select the time and frequency resources for one or more transmission opportunities from the available resources which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, and the pool(s) in which all RB sets with Sidelink consistent LBT failure detected and not cancelled and the resources of which the lowest sub-channel includes intra cell guard band PRBs if *sl-transmissionStructureForPSCCHandPSSCH* is set to 'contiguousRB' are excluded, if configured, according to the amount of selected frequency resources, the selected number of HARQ retransmissions, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

4> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and preferred resource set is not received from a UE:

5> if transmission based on full sensing or partial sensing is configured by upper layers and there are available resources left in the resources indicated by the physical layer according to clause 8.1.4 of TS 38.214 [7] for more transmission opportunities; or

5> if transmission based on random selection is configured by upper layers and there are available resources left in the resource pool for more transmission opportunities:

6> randomly select the time and frequency resources for one or more transmission opportunities from the available resources excluding all RB sets had Sidelink consistent LBT failure detected and not cancelled and the resources of which the lowest sub-channel includes intra cell guard band PRBs if *sl-transmissionStructureForPSCCHandPSSCH* is set to 'contiguousRB' are excluded, if configured according to the amount of selected frequency resources, the selected number of HARQ retransmissions, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

4> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and when the UE has own sensing result as specified in clause 8.1.4 of TS 38.214 [7] and if a preferred resource set is received from a UE:

5> if there are available resources left in the intersection of the received preferred resource set and the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] for more transmission opportunities:

6> randomly select the time and frequency resources for one or more transmission opportunities from the available resources within the intersection for SL-SCH data to be transmitted to the UE providing the preferred resource set, according to the amount of selected frequency resources, the selected number of HARQ retransmissions, the remaining PDB of SL data available in the logical channel(s) , and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

5> if the number of time and frequency resources that has been maximally selected for one or more transmission opportunities from the available resources within the intersection is smaller than the selected number of HARQ retransmissions and there are available resources left in the resources indicated by the physical layer for more transmission opportunities:

6> randomly select the time and frequency resources for the remaining transmission opportunities except for the selected resources within the intersection from the available resources outside the intersection but left in the resources indicated by the physical layer according to clause 8.1.4 of TS 38.214 [7], according to the amount of selected frequency resources, the selected number of HARQ retransmissions, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

4> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and when the UE does not have own sensing result as specified in clause 8.1.4 of TS 38.214 [7] and if a preferred resource set is received from a UE; and

4> if there are available resources left in the received preferred resource set for more transmission opportunities:

5> randomly select the time and frequency resources for one or more transmission opportunities from the available resources belonging to the received preferred resource set for SL-SCH data to be transmitted to the UE providing the preferred resource set, according to the amount of selected frequency resources, the selected number of HARQ retransmissions, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

4> use the randomly selected resource to select a set of periodic resources spaced by the resource reservation interval for transmissions of PSCCH, PSSCH, if available and SL-PRS, if available corresponding to the number of retransmission opportunities of the MAC PDUs determined in TS 38.214 [7] or SL-PRS(s);

4> consider the first set of transmission opportunities as the initial transmission opportunities and the other set(s) of transmission opportunities as the retransmission opportunities;

4> consider the sets of initial transmission opportunities and retransmission opportunities as the selected sidelink grant.

3> else:

4> consider the set as the selected sidelink grant.

3> use the selected sidelink grant to determine the set of PSCCH durations and the set of PSSCH durations and the set of SL-PRS transmission occasion(s), if available, according to TS 38.214 [7] if the selected resource pool is not Dedicated SL-PRS resource pool or to determine the set of PSCCH durations and SL-PRS transmission occasion(s) if the selected resource pool is Dedicated SL-PRS resource pool according to TS 38.214 [7].

2> else if *SL\_RESOURCE\_RESELECTION\_COUNTER* = 0 and when *SL\_RESOURCE\_RESELECTION\_COUNTER* was equal to 1 the MAC entity randomly selected, with equal probability, a value in the interval [0, 1] which is less than or equal to the probability configured by RRC in *sl-ProbResourceKeep*:

3> clear the selected sidelink grant, if available;

3> randomly select, with equal probability, an integer value in the interval [5, 15] for the resource reservation interval higher than or equal to 100ms or in the interval $\left[5×\left⌈\frac{100}{max\left(20, P\_{rsvp\\_TX}\right)}\right⌉,15×\left⌈\frac{100}{max\left(20, P\_{rsvp\\_TX}\right)}\right⌉\right] $ for the resource reservation interval lower than 100ms and set *SL\_RESOURCE\_RESELECTION\_COUNTER* to the selected value;

3> reuse the previously selected sidelink grant for the number of transmissions of the MAC PDUs or SL-PRS(s) determined in TS 38.214 [7] with the resource reservation interval to determine the set of PSCCH durations, the set of PSSCH durations, and the pending SL-PRS transmission(s), if available, according to TS 38.214 [7].

1> if the MAC entity has selected to create a selected sidelink grant corresponding to transmission(s) of a single MAC PDU, and if SL data is available in a logical channel, or an SL-CSI reporting is triggered, or a Sidelink DRX Command indication is triggered or a Sidelink Inter-UE Coordination Information reporting is triggered, or a Sidelink Inter-UE Coordination Request is triggered; or

1> if the MAC entity has selected to create a selected sidelink grant corresponding to transmission of a single SL-PRS, which has been triggered by the upper layer or by the reception of a SCI from a peer UE:

2> if single carrier frequency is configured:

3> if SL data is available in the logical channel for NR sidelink discovery:

4> if *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon* is configured according to TS 38.331 [5]:

5> select the *sl-DiscTxPoolSelected* configured in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon* for the transmission of NR sidelink discovery message.

4> else:

5> select any pool of resources among the configured pools of resources except for Dedicated SL-PRS resource pool, if configured.

3> else if SL data is available in the logical channel for BRID for A2X communication:

4> if *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X* is configured according to TS 38.331 [5]:

5> if resource pool(s) is configured with *sl-A2X-Service* indicating *brid* or *bridAndDAA*:

6> select any pool of resources among the resource pool(s) configured with *sl-A2X-Service* indicating *brid* or *bridAndDAA* in *sl-TxPoolSelectedNormal* configured in *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X* for the transmission of SL data for A2X communication.

5> else:

6> select any pool of resources among the configured pools of resources except the pool(s) in *sl-BWP-PoolConfigA2X*, *sl-BWP-PoolConfigCommonA2X*, *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured or Dedicated SL-PRS resource pool, if configured.

4> else:

5> select any pool of resources among the configured pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured or Dedicated SL-PRS resource pool, if configured.

3> else if SL data is available in the logical channel for DAA for A2X communication:

4> if *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X* is configured according to TS 38.331 [5]:

5> if resource pool(s) is configured with *sl-A2X-Service* indicating *daa* or *bridAndDAA*:

6> select any pool of resources among the resource pool(s) configured with *sl-A2X-Service* indicating *daa* or *bridAndDAA* in *sl-TxPoolSelectedNormal* configured in *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X* for the transmission of SL data for A2X communication.

5> else:

6> select any pool of resources among the configured pools of resources except the pool(s) in *sl-BWP-PoolConfigA2X*, *sl-BWP-PoolConfigCommonA2X*, *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured or Dedicated SL-PRS resource pool, if configured.

4> else:

5> select any pool of resources among the configured pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured or Dedicated SL-PRS resource pool, if configured.

NOTE 3Ac: The MAC entity identifies the logical channel(s) for BRID or DAA based on the QoS information associated to BRID or DAA, i.e. PQI(s), from upper layers.

3> else if SL data for NR sidelink communication is available in the logical channel:

4> if *sl-HARQ-FeedbackEnabled* is set to *enabled* for the logical channel:

5> select any pool of resources configured with PSFCH resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig*, *sl-BWP-DiscPoolConfigCommon*, *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X*, if configured or Dedicated SL-PRS resource pool, if configured.

4> else:

5> select any pool of resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig*, *sl-BWP-DiscPoolConfigCommon*, *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X*, if configured or Dedicated SL-PRS resource pool, if configured.

3> else if SL-PRS is pending for transmission:

4> select any resource pool among the resource pool(s) allowing for SL-PRS transmission.

3> else if an SL-CSI reporting or a Sidelink DRX Command or a Sidelink Inter-UE Coordination Request or a Sidelink Inter-UE Coordination Information is triggered:

4> select any pool of resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig*, *sl-BWP-DiscPoolConfigCommon*, *sl-BWP-PoolConfigA2X* or *sl-BWP-PoolConfigCommonA2X*, if configured or Dedicated SL-PRS resource pool, if configured.

2> else (i.e. multiple carrier frequencies are configured):

3> trigger the TX carrier (re-)selection procedure as specified in clause 5.22.1.11.

2> if Sidelink consistent LBT Failure is detected as specified in clause 5.31.2 in all RB sets of the selected resource pool for the logical channel, if single carrier frequency is configured:

3> clear the selected sidelink grant on the selected pool of resources.

3> if *sl-HARQ-FeedbackEnabled* is set to *enabled* for the logical channel:

4> select any pool of resources configured with PSFCH resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured and the pool(s) including all RB sets for which Sidelink consistent LBT failures were detected and not cancelled.

3> else:

4> select any pool of resources among the pools of resources except the pool(s) in *sl-BWP-DiscPoolConfig* or *sl-BWP-DiscPoolConfigCommon*, if configured and the pool(s) including all RB sets for which Sidelink consistent LBT failures were detected and not cancelled.

2> perform the TX resource (re-)selection check on the selected pool of resources as specified in clause 5.22.1.2;

2> if the TX resource (re-)selection is triggered as the result of the TX resource (re-)selection check

3> if *sl-lbt-FailureRecoveryConfig* is configured in the SL BWP:

4> indicate to the physical layer RB set information for which Sidelink consistent LBT failure was detected and not cancelled as specified in clause 5.31.2.

3> if the TX carrier (re-)selection procedure was triggered in above and one or more carriers have been (re-)selected in the Tx carrier (re-)selection according to clause 5.22.1.11:

4> determine the order of the (re-)selected carriers, according to the decreasing order based on the highest priority of logical channels which are allowed on each (re-)selected carrier, and perform the resource selection procedure as specified in this clause for each Sidelink process on each (re-)selected carrier according to the order.

3> if one or multiple SL DRX(s) is configured in the destination UE(s) receiving SL-SCH data:

4> indicate to the physical layer SL DRX Active time in the destination UE(s) receiving SL-SCH data, as specified in clause 5.28.2.

3> if the selected resource pool is not Dedicated SL-PRS resource pool:

4> select the number of HARQ retransmissions from the allowed numbers, if configured by RRC, in *sl-MaxTxTransNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped in *sl-MaxTxTransNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) and pending SL-PRS transmission(s), if available allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-DefaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-DefaultCBR-PartialSensing* configured by RRC if partial sensing is selected and CBR measurement results are not available, or the corresponding *sl-DefaultCBR-RandomSelection* configured by RRC if random selection is selected and CBR measurement results are not available in case the *sl-TxPoolExceptional* is not used;

NOTE 3Ad: For Multi-consecutive slots transmission as specified in clause 8.1.4 of TS 38.214 [7], during resource (re)selection, leave it to UE implementation, regarding whether to calculate the number of HARQ retransmissions from the allowed numbers based on the number of MCSt transmissions, or the number of slot(s) within Multi-consecutive slots transmission.

4> select an amount of frequency resources within the range, if configured by RRC, between *sl-MinSubChannelNumPSSCH* and *sl-MaxSubChannelNumPSSCH* included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped between *sl-MinSubChannelNumPSSCH* and *sl-MaxSubChannelNumPSSCH* indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the logical channel(s) and pending SL-PRS transmission(s), if available allowed on the carrier and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-DefaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-DefaultCBR-PartialSensing* configured by RRC if partial sensing is selected and CBR measurement results are not available, or the corresponding *sl-DefaultCBR-RandomSelection* configured by RRC if random selection is selected and CBR measurement results are not available in case the *sl-TxPoolExceptional* is not used;

3> if the selected resource pool is Dedicated SL-PRS resource pool:

4> select the number of SL-PRS retransmissions from the allowed numbers, if configured by RRC, in *sl-PRS-MaxNum-Transmissions* included in *sl-CBR-SL-PRS-TxConfigList*.

3> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is not configured by RRC:

4> if transmission based on random selection is configured by upper layers:

5> if the selected resource pool is not Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resource pool which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, and the pool(s) in which all RB sets had Sidelink consistent LBT failure detected and not cancelled and the resources of which the lowest sub-channel includes intra cell guard band PRBs if *sl-transmissionStructureForPSCCHandPSSCH* is set to 'contiguousRB' are excluded, if configured, according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier, and the latency requirement of the triggered SL-CSI reporting.

5> if the selected resource pool is Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resource pool, according to the remaining SL-PRS delay budget of the SL-PRS transmission.

4> else:

5> if *sl-NRPSSCH-EUTRA-ThresRSRP-List* is configured by the RRC:

6> when SCS of NR SL is (pre-)configured as μ = 0:

7> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting.

6> when SCS of NR SL is (pre-)configured as *μ* = 1:

7> randomly select the time and frequency resources in the first of NR SL slots overlapping with an LTE SL subframe for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting.

5> else if the selected resource pool is not Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting.

5> if the selected resource pool is Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by physical layer as clasue 8.2.4 of TS 38.214 [7], according to the remaining SL-PRS delay budget of the SL-PRS transmission.

3> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and preferred resource set is not received from a UE:

4> if transmission based on random selection is configured by upper layers:

5> if the selected resource pool is not Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resource pool excluding all RB sets had Sidelink consistent LBT failure detected and not cancelled and the resources of which the lowest sub-channel includes intra cell guard band PRBs if *sl-transmissionStructureForPSCCHandPSSCH* is set to 'contiguousRB' are excluded, if configured according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting.

4> else:

5> if the selected resource pool is not Dedicated SL-PRS resource pool:

6> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7], according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting.

3> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and when the UE does not have own sensing result as specified in clause 8.1.4 of TS 38.214 [7] and if a preferred resource set is received from a UE and if the selected resource pool is not Dedicated SL-PRS resource pool:

4> randomly select the time and frequency resources for one transmission opportunity from the resources belonging to the received preferred resource set for a MAC PDU to be transmitted to the UE providing the preferred resource set, according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting.

3> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and when the UE has own sensing result as specified in clause 8.1.4 of TS 38.214 [7] and if a preferred resource set is received from a UE and if the selected resource pool is not Dedicated SL-PRS resource pool:

4> randomly select the time and frequency resources for one transmission opportunity within the intersection of the received preferred resource set and the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] for a MAC PDU to be transmitted to the UE providing the preferred resource set, according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting;

4> if there are no resources within the intersection that can be selected as the time and frequency resources for the one transmission opportunity according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier.

5> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7], according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s), and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting.

3> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and when the UE determines the resources for Sidelink Inter-UE Coordination Information transmission upon explicit request from a UE:

4> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7], according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting and the latency requirement of the Sidelink Inter-UE Coordination Information transmission, and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available.

3> if one or more SL-PRS retransmissions are selected and the selected resource pool is Dedicated SL-PRS resource pool:

4> randomly select the time and frequency resources for one or more transmission opportunities from the available resources, according to the selected number of retransmissions and the remaining SL-PRS delay budget and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9];

4> consider the first set of transmission opportunities as the initial transmission opportunities and the other set(s) of transmission opportunities as the retransmission opportunities;

4> consider the sets of initial transmission opportunities and retransmission opportunities as the selected sidelink grant.

3> else if one or more HARQ retransmissions are selected and the selected resource pool is not Dedicated SL-PRS resource pool:

4> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is not configured by RRC:

5> if transmission based on full sensing or partial sensing is configured by upper layers and there are available resources left in the resources indicated by the physical layer according to clause 8.1.4 of TS 38.214 [7] for more transmission opportunities; or

5> if transmission based on random selection is configured by upper layers and there are available resources left in the resource pool for more transmission opportunities:

6> if *sl-NRPSSCH-EUTRA-ThresRSRP-List* is configured by the RRC:

7> when SCS of NR SL is (pre-)configured as *μ* = 0:

8> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources, and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

7> when SCS of NR SL is (pre-)configured as *μ* = 1:

8> randomly select the time and frequency resources in the second of NR SL slots of NR SL slots overlapping with an LTE SL subframe to which the selected transmission resources belongs, or select the time and frequency resources in the first of NR SL slots overlapping with an LTE SL subframe for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, according to the amount of selected frequency resources and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources, and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

6> else:

7> randomly select the time and frequency resources for one or more transmission opportunities from the available resources which occur within the SL DRX Active time, if configured, as specified in clause 5.28.2 of the destination UE selected for indicating to the physical layer the SL DRX Active time above, and the pool(s) in which all RB sets with Sidelink consistent LBT failure detected and not cancelled and the resources of which the lowest sub-channel includes intra cell guard band PRBs if *sl-transmissionStructureForPSCCHandPSSCH* is set to 'contiguousRB' are excluded, if configured, according to the amount of selected frequency resources, the selected number of HARQ retransmissions and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting, and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources, and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9];

4> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and preferred resource set is not received from a UE:

5> if transmission based on sensing is configured by upper layers and there are available resources left in the resources indicated by the physical layer according to clause 8.1.4 of TS 38.214 [7] for more transmission opportunities; or

5> if transmission based on random selection is configured by upper layers and there are available resources left in the resource pool for more transmission opportunities:

6> randomly select the time and frequency resources for one or more transmission opportunities from the available resources excluding all RB sets had Sidelink consistent LBT failure detected and not cancelled and the resources of which the lowest sub-channel includes intra cell guard band PRBs if *sl-transmissionStructureForPSCCHandPSSCH* is set to 'contiguousRB' are excluded, if configured according to the amount of selected frequency resources, the selected number of HARQ retransmissions and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting, and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

4> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and when the UE has own sensing result as specified in clause 8.1.4 of TS 38.214 [7] and if a preferred resource set is received from a UE:

5> if there are available resources left in the intersection of the received preferred resource set and the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7] for more transmission opportunities:

6> randomly select the time and frequency resources for one or more transmission opportunities from the available resources within the intersection for a MAC PDU to be transmitted to the UE providing the preferred resource set, according to the amount of selected frequency resources, the selected number of HARQ retransmissions and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting, and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

5> if the number of time and frequency resources that has been maximally selected for one or more transmission opportunities from the available resources within the intersection is smaller than the selected number of HARQ retransmissions and there are available resources left in the resources indicated by the physical layer for more transmission opportunities:

6> randomly select the time and frequency resources for the remaining transmission opportunities except for the selected resources within the intersection from the available resources outside the intersection but left in the resources indicated by the physical layer according to clause 8.1.4 of TS 38.214 [7], according to the amount of selected frequency resources, the selected number of HARQ retransmissions and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting, and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

4> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and when the UE does not have own sensing result as specified in clause 8.1.4 of TS 38.214 [7] and if a preferred resource set is received from a UE; and

4> if there are available resources left in the received preferred resource set for more transmission opportunities:

5> randomly select the time and frequency resources for one or more transmission opportunities from the available resources belonging to the received preferred resource set for a MAC PDU to be transmitted to the UE providing the preferred resource set, according to the amount of selected frequency resources, the selected number of HARQ retransmissions and the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting, and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available, by ensuring the minimum time gap between any two selected resources in case that PSFCH is configured for this pool of resources and that a retransmission resource can be indicated by the time resource assignment of a prior SCI according to clause 8.3.1.1 of TS 38.212 [9].

4> if *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and when the UE determines the resources for Sidelink Inter-UE Coordination Information transmission upon explicit request from a UE:

5> randomly select the time and frequency resources for one transmission opportunity from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7], according to the amount of selected frequency resources, the remaining PDB of SL data available in the logical channel(s) allowed on the carrier, and/or the latency requirement of the triggered SL-CSI reporting and the latency requirement of the Sidelink Inter-UE Coordination Information transmission, and the remaining SL-PRS delay budget of the SL-PRS transmission(s), if available.

4> consider a transmission opportunity which comes first in time as the initial transmission opportunity and other transmission opportunities as the retransmission opportunities;

4> consider all the transmission opportunities as the selected sidelink grant.

3> else:

4> consider the set as the selected sidelink grant.

3> use the selected sidelink grant to determine PSCCH duration(s) and PSSCH duration(s) and the SL-PRS transmission occasion(s), if available, according to TS 38.214 [7] if the selected resource pool is not Dedicated SL-PRS resource pool or to determine the PSCCH duration(s) and SL-PRS transmission occasion(s) if the selected resource pool is Dedicated SL-PRS resource pool according to TS 38.214 [7].

NOTE 3Ae: MAC entity, based on UE implementation, decides whether to indicate the number of consecutive slots for Multi-consecutive slots transmission as specified in clause 8.1.4 of TS 38.214 [7] larger than 1.

NOTE 3Af: MAC entity, based on UE implementation, decides the value of the number of consecutive slots for Multi-consecutive slots transmission if it decides the number of consecutive slots for Multi-consecutive slots transmission larger than 1, as long as it meets the CAPC maximum COT duration requirement as specified in TS 37.213 [18].

NOTE 3Ag: When the MAC entity selects the time and frequency resources from the resources indicated by the physical layer as specified in clause 8.1.4 of TS 38.214 [7], it is up to the UE implementation whether to randomly select resources for transmission opportunities from the resources indicated by the physical layer or to select resources in consecutive slots by UE implementation from the resources indicated by the physical layer.

NOTE 3Ah: For a resource pool configured with PSFCH resource, UE cannot select consecutive slots for SL transmissions of a single TB for Multi-consecutive slots transmission.

NOTE 3Ai: 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}. 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).

NOTE 3Aj: If configured, UE may avoid selection of N consecutive resource(s) before a reserved resource of other UE when the L1 SL priority value for the transmission is higher than the L1 SL priority value of the reserved resource, where the selection of N is up to UE implementation from {0,1,2}. UE may avoid selection of M consecutive resource(s) after a reserved resource of other UE when the transmitting symbols of the reserved resource overlap with LBT of its own selected resource, where the selection of M is up to UE implementation from {0,1,2}. It is up to UE implementation how the physical layer reports detected reserved resources to MAC layer.

NOTE 3Ak: If configured, if transmission in slot(s) at least $T\_{proc,0}^{SL}$ before a reserved resource of other UE is able to share its initiated COT to the reservation, UE may prioritize/select resource(s) in the slot(s) for transmission. It is up to UE implementation how the physical layer reports detected reserved resources to MAC layer.

NOTE 3Al: MAC entity, based on UE implementation, decides how to determine COT sharing cast type, COT sharing additional ID and remaining COT duration specified in TS 37.213 [18].

NOTE 3A1: If *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC and if multiple preferred resource sets are received from the same UE, it is up to UE implementation to use one or multiple of them in its resource (re)selection.

NOTE 3B1: If retransmission resource(s) cannot be selected by ensuring that the resource(s) can be indicated by the time resource assignment of a prior SCI, how to select the time and frequency resources for one or more transmission opportunities from the available resources is left for UE implementation by ensuring the minimum time gap between any two selected ‎resources in case that PSFCH is configured for this pool of ‎resources.

NOTE 3B2: When the UE receives both a single preferred resource set and a single non-preferred resource set from the same peer UE or different peer UEs, when the UE has own sensing results, it is up to the UE implementation to use the preferred resource set in its resource (re)selection for transmissions to the peer UE providing the preferred resource set.

NOTE 3B3: The UE is not required to use any resource from the preferred resource set in its resource (re-)selection if that resource is earlier than ($T\_{proc,0}^{SL}$+$T\_{proc,1}^{SL}$+$T\_{proc,2}^{SL}$) after the resource of Inter-UE Coordination Information transmission, where $T\_{proc,2}^{SL}$ is equal to ($T\_{proc,0}^{SL}$+$T\_{proc,1}^{SL}$) when only MAC CE is used for inter-UE Coordination Information transmission, or $T\_{proc,2}^{SL}$ is equal to $T\_{proc,0}^{SL}$ when MAC CE and SCI format 2-C are both used for Inter-UE Coordination Information transmission. The case when $T\_{proc,2}^{SL}$ is equal to $T\_{proc,0}^{SL}$ is assuming that SCI format 2-C is received. $ T\_{proc,0}^{SL}$ and $T\_{proc,1}^{SL}$ are specified in clause 8.1.4 of TS 38.214 [7].

NOTE 3B4: For Inter-UE Coordination Information triggered by an explicit Inter-UE Coordination Request in Scheme 1, whether or not to transmit the Inter-UE Coordination Information upon the Inter-UE Coordination Request reception is determined by UE implementation subject to Release-16 procedure of UL/SL prioritization, LTE SL/NR SL prioritization, and congestion control.

NOTE 3B5: If configured by RRC, *sl-IUC-Explicit* set to *enabled* and an SL-IUC request is received for the Source Layer-2 ID and Destination Layer-2 ID pair of a unicast, MAC layer indicates to physical layer the resource selection window, resource set type (i.e., preferred resource set), L1 priority, the number of sub-channels to be used for the PSSCH/PSCCH transmission and the resource reservation period for preferred resource set. If configured by RRC, *sl-IUC-Explicit* set to *enabled* and an SL-IUC request is received for the Source Layer-2 ID and Destination Layer-2 ID pair of a unicast, MAC layer indicates to physical layer resource set type (i.e., non-preferred resource set) and the resource selection window for non-preferred resource set.

NOTE 3B6: If either *sl-IUC-Explicit* or *sl-IUC-Condition* is configured as *enabled*,UE considers the reception of preferred and non-preferred resource is enabled.

NOTE 3B7: When *sl-TriggerConditionCoordInfo* is set to value 0, for groupcast or broadcast of Inter-UE Coordination Information triggered by a condition in Scheme 1, which Destination Layer-2 ID (and the corresponding cast-type) a UE selects among Destination Layer-2 IDs that are already used or interested in NR sidelink transmission is up to the UE implementation.

1> if a selected sidelink grant is available for retransmission(s) of a MAC PDU which has been positively acknowledged as specified in clause 5.22.1.3.1a, except a positive acknowledgement to Multi-consecutive slots transmission (i.e., multiple TBs case) of the MAC PDU and there is remaining slot(s) for this MAC PDU:

2> clear the PSCCH duration(s) and PSSCH duration(s) corresponding to retransmission(s) of the MAC PDU from the selected sidelink grant.

NOTE 3C: How the MAC entity determines the remaining PDB of SL data is left to UE implementation.

If the UE is configured with IUC Scheme 1 (i.e., *sl-InterUE-CoordinationScheme1* enabling reception/transmission of preferred resource set and non-preferred resource set is configured by RRC) and Co-ex (i.e., *sl-NRPSSCH-EUTRA-ThresRSRP-List* is configured by RRC) and the selected resource pool is not Dedicated SL-PRS resource pool and when SCS of NR SL is (pre-)configured as μ = 1, the MAC entity shall for each Sidelink process perform additional restriction of resource selection (on top of resource selection procedure for IUC scheme 1 above) as follow:

- For initial transmission, randomly select first of NR SL slots overlapping with an LTE SL subframe for one transmission opportunity from the resources indicated in the resource selection procedure for IUC scheme 1 above;

- For retransmission, randomly select the time and frequency resources in the second of NR SL slots overlapping with an LTE SL subframe to which the selected transmission resources belongs, or select the time and frequency resources in the first of NR SL slots overlapping with an LTE SL subframe for one transmission opportunity from the resources indicated in the resource selection procedure for IUC scheme 1 above.

For a selected sidelink grant, the minimum time gap between any two selected resources comprises:

- For SL operation without shared spectrum channel access, a time gap between the end of the last symbol of a PSSCH transmission of the first resource and the start of the first symbol of the corresponding PSFCH reception determined by *sl-MinTimeGapPSFCH* and *sl-PSFCH-Period* for the pool of resources; and

- For SL operation with shared spectrum channel access, the time gap between the end of the last symbol of a PSSCH transmission of the first resource and the start of the first symbol of the last corresponding PSFCH reception occasion determined by *sl-MinTimeGapPSFCH*, *sl-NumPSFCH-Occasions* and *sl-PSFCH-Period* for the pool of resources; and

- a time required for PSFCH reception and processing plus sidelink retransmission preparation including multiplexing of necessary physical channels and any TX-RX/RX-TX switching time.

NOTE 4: How to determine the time required for PSFCH reception and processing plus sidelink retransmission preparation is left to UE implementation.

NOTE 4A: For the minimum time gap requirement on shared SL-PRS resource pool, the last symbol of a PSSCH transmission might be mapped to SL-PRS.

The MAC entity shall for each PSSCH duration not on Dedicated SL-PRS resource pool:

1> for each sidelink grant occurring in this PSSCH duration:

2> select a MCS table allowed in the pool of resource which is associated with the sidelink grant;

NOTE 4a: MCS table selection is up to UE implementation if more than one MCS table is configured.

2> if the MAC entity has been configured with Sidelink resource allocation mode 1 or Sidelink resource allocation Scheme 1 for SL-PRS transmission on Shared SL-PRS resource pool:

3> select a MCS which is, if configured, within the range that is configured by RRC between *sl-MinMCS-PSSCH* and *sl-MaxMCS-PSSCH* associated with the selected MCS table included in *sl-ConfigDedicatedNR*;

3> set the resource reservation interval to 0ms.

2> else if the MAC entity has been configured with Sidelink resource allocation mode 2 or Sidelink resource allocation Scheme 2 for SL-PRS transmission on Shared SL-PRS resource pool:

3> select a MCS which is, if configured, within the range, if configured by RRC, between *sl-MinMCS-PSSCH* and *sl-MaxMCS-PSSCH* associated with the selected MCS table included in *sl-PSSCH-TxConfigList* and, if configured by RRC, overlapped between *sl-MinMCS-PSSCH* and *sl-MaxMCS-PSSCH* associated with the selected MCS table indicated in *sl-CBR-PriorityTxConfigList* for the highest priority of the sidelink logical channel(s) in the MAC PDU or pending SL-PRS transmission(s), if available, and the CBR measured by lower layers according to clause 5.1.27 of TS 38.215 [24] if CBR measurement results are available or the corresponding *sl-DefaultTxConfigIndex* configured by RRC if CBR measurement results are not available or the corresponding *sl-DefaultCBR-PartialSensing* configured by RRC if partial sensing is selected and CBR measurement results are not available, or the corresponding *sl-DefaultCBR-RandomSelection* configured by RRC if random selection is selected and CBR measurement results are not available in case the *sl-TxPoolExceptional* is not used;

3> if the MAC entity decides not to use the selected sidelink grant for the next PSSCH duration corresponding to an initial transmission opportunity:

4> set the resource reservation interval to 0ms.

3> else:

4> set the resource reservation interval to the selected value.

NOTE 5: MCS selection is up to UE implementation if the MCS or the corresponding range is not configured by RRC.

2> if the configured sidelink grant has been activated and this PSSCH duration corresponds to the first PSSCH transmission opportunity within this *sl-PeriodCG* of the configured sidelink grant:

3> set the HARQ Process ID to the HARQ Process ID associated with this PSSCH duration and, if available, all subsequent PSSCH duration(s) occuring in this *sl-PeriodCG* for the configured sidelink grant;

3> determine that this PSSCH duration is used for initial transmission;

3> flush the HARQ buffer of Sidelink process associated with the HARQ Process ID.

2> deliver the sidelink grant, the selected MCS, and the associated HARQ information to the Sidelink HARQ Entity for this PSSCH duration.

The MAC entity shall for each PSCCH duration on Dedicated SL-PRS resource pool:

1> if the MAC entity is not configured with multiple SL-PRS transmissions with Sidelink resource allocation scheme 2; or

1> if the MAC entity is configured with Sidelink resource allocation scheme 1:

2> set the resource reservation period to 0.

1> else if the MAC entity is configured with multiple SL-PRS transmission with Sidelink resource allocation scheme 2:

2> set the resource reservation period to the selected value.

1> if the configured sidelink grant has been activated and this PSSCH duration corresponds to the first PSSCH transmission opportunity within this *sl-PeriodCG* of the configured sidelink grant:

2> set the SL-PRS Process ID to the SL-PRS Process ID associated with this PSSCH duration and, if available, all subsequent SL-PRS transmission occasion(s) occuring in this *sl-PeriodCG* for the configured sidelink grant;

2> determine that this SL-PRS transmission occasion is used for initial transmission.

1> process the sidelink grant according to clause 5.22.1.3.4 with the corresponding SL-PRS transmission information.

For configured sidelink grants not on Dedicated SL-PRS resource pool, the HARQ Process ID associated with the first slot of an SL transmission is derived from the following equation:

 HARQ Process ID = [floor(CURRENT\_slot / *PeriodicitySL*)] modulo *sl-NrOfHARQ-Processes*
 + *sl-HARQ-ProcID-offset*

For configured sidelink grant on Dedicated SL-PRS resource pool, the SL-PRS Process ID associated with the first slot of an SL transmission is derived from the following equation:

 SL-PRS Process ID = [floor(CURRENT\_slot / *PeriodicitySL*)] modulo *nrOfSL-PRSProc*

where CURRENT\_slot refers to current logical slot in the associated resource pool, and *PeriodicitySL* is defined in clause 5.8.3.

NOTE: It is up to the UE's implementation the maximum number of parallel SL-PRS transmissions that it can maintain (i.e., *nrOfSL-PRSProc*), corresponding to different SL positioning sessions. If the UE is asked to transmit more than it can handle, the UE will be unable to comply.

====================================NEXT CHANGE ====================================

##### 5.22.1.3.4 Processing of sidelink grant on Dedicated SL-PRS resource pool

For each sidelink grant, the MAC entity shall:

1> if the MAC entity determines that the sidelink grant is used for initial transmission as specified in clause 5.22.1.1; or

1> if the sidelink grant is a configured sidelink grant and no MAC PDU has been obtained in an *sl-PeriodCG* of the configured sidelink grant:

2> associate a Sidelink process to this sidelink grant;

2> set the Destination ID to the Destination layer-2 ID corresponding to the SL-PRS transmission;

2> if the length of the Source ID is configured to as 12 bit:

3> set the Source ID to the 12 LSB of the Source layer-2 ID corresponding to the SL-PRS transmission;

2> else if length of the Source ID is configured to as 24 bit:

3> set the Source ID to the Source layer-2 ID corresponding to the SL-PRS transmission;

2> set the cast type indicator to one of broadcast, groupcast and unicast as indiated by the upper layer;

2> set the SL-PRS priority as the value indicated by upper layer;

2> set the SL-PRS resource ID;

NOTE 1: The SL-PRS resource ID(s) for initial transmission and retransmission(s) are determined by the UE's own upper layers by implementation.

2> if the upper layer triggers SL-PRS transmission of the peer UE identified by the Destination layer-2 ID:

3> set the SL-PRS request to *request*;

2> deliver the SL-PRS transmission information to the Sidelink process;

2> instruct the associated Sidelink process to trigger a new transmission as defined in 5.22.1.3.5.

1> else (i.e., retransmission):

2> identify the Sidelink process associated with this grant;

2> if *sl-PRS-MaxNumTransmissions* is configured and the number of transmissions of the SL-PRS has not reached *sl-PRS-MaxNumTransmissions*:

3> set the SL-PRS resource ID;

3> deliver the SL-PRS transmission information to the Sidelink process;

3> instruct the associated Sidelink process to trigger a retransmission as defined in 5.22.1.3.5.

NOTE 2: For configured sidelink grant, the Sidelink process for retransmission is identified by the SL-PRS Process ID as specified in clause 5.22.1.1.

====================================NEXT CHANGE ====================================

#### 5.22.1.5 Scheduling Request

In addition to clause 5.4.4, the Scheduling Request (SR) is also used for requesting SL-SCH resources for new transmission when triggered by the Sidelink BSR (clause 5.22.1.6) or the SL-CSI reporting (clause 5.22.1.7) or SL-DRX Command indication. The Scheduling Request (SR) is also used for requesting SL-PRS resources for new transmission when triggered by SL-PRS resource request (clause 6.1.3.74). If configured, the MAC entity performs the SR procedure as specified in this clause unless otherwise specified in clause 5.4.4. For a sidelink logical channel or for SL-CSI reporting or for SL-DRX Command indication or for Sidelink consistent LBT failure recovery or for SL-PRS Resource Request, at most one PUCCH resource for SR is configured per UL BWP.

The SR configuration of the logical channel that triggered the Sidelink BSR (clause 5.22.1.6) is also considered as corresponding SR configuration for the triggered SR (clause 5.4.4). The value of the priority of the triggered SR corresponds to the value of priority of the logical channel that triggered the SR.

Each sidelink logical channel and Sidelink consistent LBT failure recovery may be mapped to zero or one SR configuration, which is configured by RRC. If the SL-CSI reporting procedure is enabled by RRC, the SL-CSI reporting is mapped to one SR configuration for all PC5-RRC connections. The SR configuration of the SL-CSI reporting triggered according to 5.22.1.7 is considered as corresponding SR configuration for the triggered SR (clause 5.4.4). The value of the priority of the triggered SR triggered by SL-CSI reporting corresponds to the value of the priority of the Sidelink CSI Reporting MAC CE. The SR configuration of the SL-CSI reporting is considered as corresponding SR configuration for the triggered SR of SL-DRX Command indication triggered according to 5.28.3. The value of the priority of the triggered SR triggered by SL-DRX Command indication corresponds to the value of the priority of the Sidelink DRX Command MAC CE. The SR configuration of the Sidelink consistent LBT failure recovery triggered according to 5.31.2 is considered as corresponding SR configuration for the triggered SR (clause 5.4.4). The value of the priority of the triggered SR triggered by Sidelink consistent LBT failure recovery corresponds to the value of the priority of the SL LBT failure MAC CE. SL-PRS resource request may be mapped to zero or one SR configuration, which is configured by RRC. The value of the priority of the triggered SR triggered by SL-PRS resource request corresponds to the lowest value of the priority of all SL-PRS(s) indicated in the SL-PRS Resource Request MAC CE.

All pending SR(s) triggered according to the Sidelink BSR procedure (clause 5.22.1.6) prior to the MAC PDU assembly shall be cancelled and each respective *sr-ProhibitTimer* shall be stopped when the MAC PDU is transmitted and this PDU includes an SL-BSR MAC CE which contains buffer status up to (and including) the last event that triggered a Sidelink BSR (see clause 5.22.1.4) prior to the MAC PDU assembly.

All pending SR(s) triggered according to the Sidelink consistent LBT failure recovery (clause 5.31.2) shall be cancelled and each respective *sr-ProhibitTimer* shall be stopped when the MAC PDU is transmitted and this PDU includes an SL LBT failure MAC CE that indicates Sidelink consistent LBT failure or when all the triggered Sidelink consistent LBT failure(s) for an SL BWP is cancelled.

All pending SR(s) triggered according to the Sidelink BSR procedure (clause 5.22.1.6) shall be cancelled and each respective *sr-ProhibitTimer* shall be stopped when the SL grant(s) can accommodate all pending data available for transmission in sidelink.

If there is pending SR triggered by Sidelink consistent LBT failure recovery which has no corresponding SR configuration, MAC entity initiate a Random Access procedure (see clause 5.1) on the Serving Cell and cancel the pending SR.

The pending SR triggered according to the SL-CSI reporting for a destination shall be cancelled and each respective *sr-ProhibitTimer* shall be stopped when the SL grant(s) can accommodate the Sidelink CSI Reporting MAC CE when the SL-CSI reporting that has been triggered but not cancelled or when the triggered SL-CSI reporting is cancelled due to latency non-fulfilment as specified in 5.22.1.7. The pending SR triggered according to the SL-DRX Command indication for a destination shall be cancelled and each respective *sr-ProhibitTimer* shall be stopped when the SL grant(s) can accommodate the Sidelink DRX Command MAC CE when the SL-DRX Command indication that has been triggered but not cancelled. All pending SR(s) triggered by either Sidelink BSR or Sidelink CSI report or Sidelink DRX Command indication shall be cancelled, when RRC configures Sidelink resource allocation mode 2.

All pending SR(s) triggered according to the SL-PRS Resource Request procedure (clause 5.22.1.12) prior to the MAC PDU assembly shall be cancelled and each respective *sr-ProhibitTimer* shall be stopped when the MAC PDU is transmitted and this PDU includes an SL-PRS Resource Request MAC CE which contains status of the pending aperiodic SL-PRS transmission(s) up to (and including) the last event that triggered a SL-PRS Resource Request (see clause 5.22.1.12) prior to the MAC PDU assembly.

All pending SR(s) triggered according to the SL-PRS Resource Request procedure (clause 5.22.1.12) shall be cancelled and each respective *sr-ProhibitTimer* shall be stopped when the SL grant(s) can accommodate the all the pending aperiodic SL-PRS transmission(s).

====================================NEXT CHANGE ====================================

#### 5.22.1.12 SL-PRS Resource Request

SL-PRS transmission can be triggered either by lower layer signalling from the peer UE or the UE's own upper layers. The SL-PRS Resource Request procedure is used to provide gNB with information about the triggered SL-PRS transmission.

The MAC entity shall, if Sidelink resource allocation scheme 1 for SL-PRS transmission is configured:

1> if aperiodic SL-PRS is triggered:

2> trigger the SL-PRS Resource Request.

1> else if periodic SL-PRS is triggered:

2> notify RRC to send SL-PRS Resource Request.

The MAC entity shall:

1> if SL-PRS Resource Request is triggered and not cancelled:

2> if UL-SCH resources are available for a new transmission and these UL-SCH resources can accommodate the SL-PRS Resource Request MAC CE plus its subheader as a result of logical channel prioritization:

3> instruct the Multiplexing and Assembly entity to generate the SL-PRS Resource Request MAC CE.

2> else:

3> trigger a Scheduling Request for the SL-PRS Resource Request MAC CE as specified in clause 5.4.4.

The SL-PRS Resource Request MAC CE may be cancelled when SL grant can accommodate all the pending aperiodic SL-PRS transmissions. The SL-PRS Resource Request MAC CE shall be cancelled when a MAC PDU is transmitted and this PDU includes a SL-PRS Resource Request MAC CE that indicates request for all the aperiodic pending SL-PRS transmission(s) since the last transmission of the MAC CE.

====================================NEXT CHANGE ====================================

##### 5.22.2.2.2 Sidelink process

For each PSSCH duration where a transmission takes place for the Sidelink process, one TB and the associated HARQ information is received from the Sidelink HARQ Entity.

For each received TB and SL-PRS, if available and associated Sidelink transmission information, the Sidelink process shall:

1> if this is a new transmission:

2> attempt to decode the received data.

1> else if this is a retransmission:

2> if the data for this TB has not yet been successfully decoded:

3> instruct the physical layer to combine the received data with the data currently in the soft buffer for this TB and attempt to decode the combined data.

1> if the sidelink transmission information in the SCI indicates SL-PRS transmission:

2> if the SL-PRS transmission is associated to unicast:

3> if the DST field of the decoded MAC PDU subheader is equal to the 8 MSB of any of the Source Layer-2 ID(s) of the UE for which the 16 LSB are equal to the Destination ID in the corresponding SCI; and

3> if the SRC field of the decoded MAC PDU subheader is equal to the 16 MSB of any of the Destination Layer-2 ID(s) of the UE for which the 8 LSB are equal to the Source ID in the corresponding SCI:

4> instruct the physical layer to perform SL-PRS reception.

2> else if the SL-PRS transmission is associated with groupcast or broadcast:

3> if the DST field of the decoded MAC PDU subheader is equal to the 8 MSB of any of the Destination Layer-2 ID(s) of the UE for which the 16 LSB are equal to the Destination ID in the corresponding SCI:

4> instruct the physical layer to perform SL-PRS reception.

1> if the data which the MAC entity attempted to decode was successfully decoded for this TB; or

1> if the data for this TB was successfully decoded before:

2> if this is the first successful decoding of the data for this TB:

3> if this TB is associated to unicast and the DST field of the decoded MAC PDU subheader is equal to the 8 MSB of any of the Source Layer-2 ID(s) of the UE for which the 16 LSB are equal to the Destination ID in the corresponding SCI:

4> if the SRC field of the decoded MAC PDU subheader is equal to the 16 MSB of any of the Destination Layer-2 ID(s) of the UE for which the 8 LSB are equal to the Source ID in the corresponding SCI; or

4> if this TB is corresponding to the logical channel with LCID equal to 0 or 1 and determined to be the first TB:

5> deliver the decoded MAC PDU to the disassembly and demultiplexing entity.

3> if this TB is associated to groupcast or broadcast:

4> if the DST field of the decoded MAC PDU subheader is equal to the 8 MSB of any of the Destination Layer-2 ID(s) of the UE for which the 16 LSB are equal to the Destination ID in the corresponding SCI; or

4> if this TB is corresponding to the logical channel with LCID equal to 58, and the DST field of the decoded MAC PDU subheader is equal to the 8 MSB of any of the Source Layer-2 ID(s) of the UE for which the 16 LSB are equal to the Destination ID in the corresponding SCI:

5> deliver the decoded MAC PDU to the disassembly and demultiplexing entity.

NOTE: Whether the TB is the first TB can be determined based on the Source Layer-2 ID and Destination Layer-2 ID pair.

2> consider the Sidelink process as unoccupied.

1> else:

2> instruct the physical layer to replace the data in the soft buffer for this TB with the data which the MAC entity attempted to decode.

1> if HARQ feedback is enabled by the SCI:

2> if negative-only acknowledgement is indicated by the SCI according to clause 8.4.1 of TS 38.212 [9]:

3> if UE's location information is available and distance beteween UE's location and the central location of the nearest zone that is calculated based on the *Zone\_id* in the SCI and the value of *sl-ZoneLength* corresponding to the communication range requirement in the SCI as specified in TS 38.331 [5] is smaller or equal to the communication range requirement in the SCI; or

3> if none of *Zone\_id* and communication range requirement is indicated by the SCI; or

3> if UE's location information is not available:

4> if the data which the MAC entity attempted to decode was not successfully decoded for this TB and the data for this TB was not successfully decoded before:

5> instruct the physical layer to generate a negative acknowledgement of the data in this TB.

2> if negative-positive acknowledgement or unicast is indicated by the SCI according to clause 8.4.1 of TS 38.212 [9]:

3> if the data which the MAC entity attempted to decode was successfully decoded for this TB or the data for this TB was successfully decoded before:

4> instruct the physical layer to generate a positive acknowledgement of the data in this TB.

3> else:

4> instruct the physical layer to generate a negative acknowledgement of the data in this TB.

==================================NEXT CHANGE=====================================

### 5.26.1 General

Periodic and semi-persistent Positioning SRS with or without positioning SRS bandwidth aggregation can be configured for Positioning SRS transmission in RRC\_INACTIVE.

SRS for positioning Tx frequency hopping as in clause 5.32 can also be configured for Positioning SRS transmission in RRC\_INACTIVE.

The MAC entity shall,

1> if the TA of the configured Positioning SRS is valid according to clause 5.26.2, and the conditions for positioning SRS transmission in clause 7.3.1 of TS 38.213 [6] and clause 6.2.1.4 of TS 38.214 [7] are satisfied:

2> if the UE is configured with UTW and the *UplinkTimeWindowTimer* is running according to clause 5.32; or

2> if the UE is not configured with UTW:

3> instruct to the lower layer according to TS 38.214 [7] to transmit Periodic or Semi-Persistent Positioning SRS that is activated according to clause 5.18.17 or clause 5.18.37.

### 5.26.2 TA validation for SRS transmission in RRC\_INACTIVE

RRC configures the following parameters for validation for SRS transmission in RRC\_INACTIVE:

- *inactivePosSRS-RSRP-ChangeThreshold*: RSRP threshold for the increase/decrease of RSRP for time alignment validation.

The MAC entity shall:

1> if the UE receives configuration for SRS transmission in RRC\_INACTIVE:

2> store the RSRP of the downlink pathloss reference with the current RSRP value of the downlink pathloss reference as in TS 38.331 [5].

1> else if the UE is configured with SRS transmission in RRC\_INACTIVE:

2> if Timing Advance Command MAC CE is received as in clause 5.2, or;

2> if Timing Advance Command or Absolute Timing Advance Command is received for Random Access procedure that is successfully completed:

3> update the stored the RSRP of the downlink pathloss reference with the current RSRP value of the downlink pathloss reference.

2> if the UE is configured with Positioning SRS with validity area and the upper layer indicates the MAC to update the stored RSRP:

3> update the RSRP of the downlink pathloss reference with the current RSRP value of the downlink pathloss reference of the camped cell as specified in TS 38.331 [5].

The MAC entity shall consider the TA to be valid when the following conditions are fulfilled:

1> compared to the stored downlink pathloss reference RSRP value, the current RSRP value of the downlink pathloss reference of the camped cell as specified in TS 38.331 [5] has not increased/decreased by more than *inactivePosSRS-RSRP-ChangeThreshold*, if configured; and

1> *inactivePosSRS-TimeAlignmentTimer* is running or *inactivePosSRS-ValidityAreaTAT* is running when positioning validity area is configured.

====================================NEXT CHANGE ====================================

## 5.32 SRS for positioning Tx frequency hopping

SRS for positioning Tx frequency hopping can be supported for UE in RRC\_CONNECTED and RRC\_INACTIVE. The UE can be configured with UTW during which the UE is allowed to transmit SRS for positioning Tx frequency hopping.

RRC configures the following parameters for the UTW for SRS for positioning Tx frequency hopping:

- *utw-SlotPeriodicity*: Periodicity of the UTW in slot;

- *utw-SlotOffset*: Offset of the beginning of the UTW with respect to the beginning of the UTW periodicityin time domain in slot;

- *uplinkTimeWindowTimer*: Time duration when the UE performs SRS transmission for positioning Tx frequency hopping.

When UTW is configured, the MAC entity shall start the *uplinkTimeWindowTimer* in the first symbol of the slot for which the following condition is satisfied

 CURRENT\_slot modulo (*utw-SlotPeriodicity*) = *utw-SlotOffset*

where CURRENT\_slot = SFN × *numberOfSlotsPerFrame* + slot number in the frame and *numberOfSlotsPerFrame* refers to the number of consecutive slots per frame as specified in TS 38.211 [8].

When UTW is configured and the UE is in RRC\_CONNECTED, the MAC entity shall instruct the lower layer to transmit SRS for positioning Tx frequency hopping when the *uplinkTimeWindowTimer* is running.

====================================NEXT CHANGE ====================================

#### 6.1.3.34 Sidelink Configured Grant Confirmation MAC CE

The Sidelink Configured Grant Confirmation MAC CE is identified by a MAC subheader with eLCID as specified in Table 6.2.1-2b. The Sidelink Configured Grant Confirmation MAC CE is defined as follows (Figure 6.1.3.34-1):

- Ci: If there is a configured grant Type 2 with *sl-ConfigIndexCG*, or *sl-PRS-ConfigIndexCG* i configured for the MAC entity as specified in TS 38.331 [5], this field indicates the confirmation to activation/deactivation of the configured grant with *sl-ConfigIndexCG* or *sl-PRS-ConfigIndexCG* i, else the MAC entity shall ignore the Ci field. The Ci field is set to 1 to confirm that the configured grant with *sl-ConfigIndexCG* or *sl-PRS-ConfigIndexCG* i shall be activated. The Ci field is set to 0 to indicate that the configured grant with *sl-ConfigIndexCG* or *sl-PRS-ConfigIndexCG* i shall be deactivated.



Figure 6.1.3.34-1: Sidelink Configured Grant Confirmation MAC CE

====================================NEXT CHANGE ====================================

#### 6.1.3.74 SL-PRS Resource Request MAC CE

The SL-PRS Resource Request MAC CE is identified by a MAC subheader with eLCID as specified in Table 6.2.1-2b. It has a variable size with the following fields:

- Destination index: The Destination Index field identifies the destination. The length of this field is 5 bits. The value is set to one index corresponding to SL destination identity associated to same destination reported in *sl-PosTxResourceReqList* if present. The value is indexed sequentially from 0 in the same ascending order of SL destination identity in *sl-PosTxResourceReqList* as specified in TS 38.331 [5]. When multiple lists are reported, the value is indexed sequentially across all the lists in the same order as presented in *SidelinkUEInformaitonNR* message;

- SL-PRS priority: Priority of pending SL-PRS transmission. The length of this field is 3 bits;

- SL-PRS Bandwidth: Requested minimum bandwidth of pending SL-PRS transmission. The length of this field is 5 bits. Encoding of this field is the same as *sl-PRS-Bandwidth* in IE *SL-PRS-QoS-Info* as specified in TS 38.331 [5] that codepoint value 0 corresponds to the value "mhz5" of the field *sl-PRS-Bandwidth*, codepoint value 1 corresponds to the value "mhz10" of the field *sl-PRS-Bandwidth*, and so on;

- R: Reserved bit, set to 0.



Figure 6.1.3.74-1: SL-PRS Resource Request MAC control element

====================================END OF CHANGE ==================================