**3GPP TSG-RAN WG2 Meeting #116bis-e *R2-21xxxxx***

**Electronic, 17th – 25th Jan, 2022**

**Agenda item: 8.15.1**

**Source: Huawei, HiSilicon (Rapporteur)**

**Title: Summary of [POST116-e][715][V2X/SL] RRC open issues**

**Document for: Discussion and decision**

# Introduction

This is the summary of the following email discussion:

* [POST116-e][715][V2X/SL] RRC open issues (Huawei)

 **Scope:** Address and solve further stage 3 open issues (including details of UE assistance information to TX UE or network, e.g. triggering condition for transmission, parameters and value ranges to be included, and UE behaviours)

 **Intended outcome:** Discussion summary and updated 38.331 running CR (if needed)

**Deadline:** Long email discussion. Recommend to have short intermediate phase to check if you list all options/solutions companies mind when to discuss solution.

|  |  |  |
| --- | --- | --- |
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# Overall description

The first several issues are related to how UE reports sidelink DRX configuration or sidelink assistance information to gNB and the later part is based on “Editor’s note” of the endorsed RRC running CR [1]. Identified other stage-3 open issues can be discussed, if they are within the email discussion scope [2].

# RRC CR open issues

**Open issue 1:** On “which message to use, UAI/SUI” to capture UE reporting DRX configuration or sidelink assistance information to its serving gNB:

In legacy Uu mechanism, the assistance information for Uu DRX is captured with “*UEAssistanceInformation*” including e.g. “*DRX-Preference*”. It is understood that both sidelink DRX configuration and sidelink assistance information would have similar contents as e.g. “*DRX-Preference-r16*” and can be configured as e.g. “*sl-AssistanceConfigNR*” in “*OtherConfig*”. On the other hand, “*SidelinkUEInformationNR*” is used to inform the network that e.g. UE “is reporting the sidelink UE capability information of the associated peer UE for unicast communication”, or “is reporting the RLC mode information of the sidelink data radio bearer(s) received from the associated peer UE for unicast communication” (clause 5.8.3.18 [3]), which could be considered as the similar behaviour as to report sidelink DRX configuration or sidelink assistance information for the peer UE.

**Q1: Which option would your company support on UE reporting sidelink DRX configuration or sidelink assistance information to its serving gNB?**

**Option 1: Use UAI.**

**Option 2: Use SUI.**

**Option 3: Others, please elaborate.**

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| --- | --- | --- |
| **Company** | **Option** | **Further comments** |
| OPPO | 2 | Content-wise, as analysed by rapp, there is no big difference.Yet one difference (as asked by Q2) is that UAI report is normally dependent on network configuration (e.g., using “*OtherConfig*”), R2 has not concluded on the usage of this kind of network configuration flag for DRX configuration, so that is one thing to consider for option-1. |
| Xiaomi | Option 2 | SUI already includes information related to SL DRX, e.g. QoS profile and destination ID. Therefore, Reusing SUI is more sufficient |
| Sharp | Option 2 | We prefer to reuse SUI. |
| CATT | Option 2 | Prefer to use SUI to report the sidelink DRX configuration or sidelink assistance information, which is type of SL information and is better to be included in the SUI. Option.2 could also avoid the issue of option.1 proposed by OPPO. |
| Ericsson | Option 2 |  |
| LG | Option 2 with comment | SUI already includes destination ID and QoS profile. So, we think it’s better to reuse SUI for reporting SL DRX configuration. It seems necessary to clarify whether this question is confined to the operation basis of the current agreement. |
| vivo | Option 1 | If one considers the “NW capability of SL DRX” as pointed out by companies in Q3, why not directly use UAI which depends on NW configuration? |
| Huawei, HiSilicon | Option 1 | First of all, compared with SUI, the benefit of UAI would be enabling the network to configure the UE to report sidelink DRX configuration or sidelink assistance information, which would make the Uu reporting managed by the network and make it possible for Uu radio resource overhead reduction. That is, when the network is aware that SL DRX is not to be supported, it can stop UE reporting whereas it might not be possible with SUI approach. Additionally, the legacy UAI already includes Uu DRX assistance info, so it would be straightforward to also put SL DRX assistance information into UAI.Further, as the current SUI indeed organizes some SL information based on destination ID, we think there is no problem to also organize SL information (e.g., sidelink DRX configuration or sidelink assistance information) per destination ID in UAI. |
| InterDigital | Option 2 |  |
| Intel | Option 2 | Same comment as Xiaomi |
| Apple | Option 2 |  |
| Spreadtrum | Option 1 |  |
| NEC | Option 2 | Considering SUI already includes peer UE’s sidelink UE capability information, we think SUI is a proper choice. |
| Samsung | Option 2 |  |
| Qualcomm | Option 2 |  |
| Fraunhofer  | Option 1 |  |
| Lenovo | Option 2 | Prefer to report SL DRX information in the same message as destination and QoS associated information  |
| ZTE | Option 2 |  |

**[Summary]:** Option 1: 4/18, Option 2: 14/18. There is a majority to support using SUI.

**Proposal 1: UE uses SUI to report sidelink DRX configuration or sidelink assistance information to its serving gNB.**

**Open issue 2**: On the triggering condition for the transmission of sidelink DRX configuration and sidelink DRX assistance information:

If UAI is used for the reporting, on when to initiate the transmission of UAI related to sidelink DRX configuration and sidelink DRX assistance information, by RX UE and TX UE respectively to their serving gNBs, it could be implemented as “initiate the procedure in several cases, including upon being configured to provide sidelink DRX configuration received from the peer UE and upon change of sidelink DRX configuration received from the peer UE.” And “may initiate the procedure in several cases, including upon being configured to provide sidelink DRX assistance information received from the peer UE and upon change of sidelink DRX assistance information from the peer UE”.

It shall be noted that, as in clause 5.8.3.2 [3] for SUI, similar description can be found as “upon change of” and “if configured and the UE did not transmit”. It is understood that, if SUI is used for the reporting, the trigger condition could be as well “upon being configured to provide sidelink DRX configuration received from the peer UE and upon change of sidelink DRX configuration received from the peer UE”, and “upon being configured to provide sidelink DRX assistance information received from the peer UE and upon change of sidelink DRX assistance information from the peer UE”.

**Q2: If UAI is used for UE to report sidelink DRX configuration or sidelink assistance information to its serving gNB, which option of triggering condition for the transmission would your company support?**

**Option 1: “if configured to provide and UE did not transmit”.**

**Option 2: “upon change of sidelink DRX configuration/sidelink DRX assistance information received from the peer UE”.**

**Option 3: others, please elaborate.**

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| **Company** | **Option** | **Further comments** |
| OPPO | 1, 2 | As in legacy. |
| Sharp | 1,2 |  |
| vivo | 1, 2 |  |
| Huawei, HiSilicon | 1,2 | Reuse the legacy mechanism of UAI. |
| InterDigital | 1, 2 |  |
| Apple | 1,2 |  |
| Spreadtrum | 1,2 |  |
| Qualcomm | 1, 2 |  |
| Fraunhofer | 1, 2 |  |
| Lenovo | 1,2 | Reuse legacy |
| ZTE | 1,2 |  |

[Summary] all companies support the triggering conditions of both option 1 and option 2. No proposal is given considering P1.

**Q3: If SUI is used for UE to report sidelink DRX configuration or sidelink assistance information to its serving gNB, which option of triggering condition for the transmission would your company support?**

**Option 1: “if configured to provide and UE did not transmit”.**

**Option 2: “upon change of sidelink DRX configuration/sidelink DRX assistance information received from the peer UE”.**

**Option 3: serving cell supports sidelink DRX and UE did not transmit, FFS how for UE to acknowledge serving cell’s support;**

**Option 4: others, please elaborate.**

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| --- | --- | --- |
| **Company** | **Option** | **Further comments** |
| OPPO | 2 | In case of SUI, seems no need for option-1 as in legacy. |
| Xiaomi | Option 2 and option 3 | According to the agreement, UE shall report received DRX configuration or assistance information, if gNB is capable of sidelink DRX. We don’t see the need to make it configurable. In legacy, SUI is reported as long as SIB12 is provided, which indicates the cell supports sidelink. Considering sidelink DRX and sidelink are separate feature, UE shall only report the received SL DRX and assistance information if serving cell supports sidelink DRX. We can further discuss how for UE to acknowledge serving cell’s support. |
| Sharp | 1,2 |  |
| CATT | Option.2 and see comment | For option2, in order to make it clear, we prefer a description similar to below condition to avoid the misunderstanding to conditions for “sidelink DRX configuration” and “sidelink DRX assistance information”Option 2: Option 2 a: “upon change of sidelink DRX configuration information received from the peer UE”.Option 2.b: “upon receiving sidelink DRX assistance information from the peer UE”.In option 2.a, the UE will always read the content in the sidelink DRX configuration information and decide whether to report it to the network based on the parameters are changed or not. In option2.b, the UE will transfer the received information to network without storing or comparing sidelink DRX assistance information. It is also reasonable and aligned to the agreement in RAN2#115e “For SL unicast, RX UE may send the SL DRX assistance information to TX UE when the previously transmitted SL DRX assistance information has changed.” |
| Ericsson | Option 2 but | We think that the comment from Xiaomi is quite reasonable. If the gNB is not DRX-capable, there is not point for the UE to report its DRX configuration. We think that the UE can have an hint whether if the cell support DRX by the configuration is SIB12, but good if RAN2 discuss this issue.Regarding the triggering, it would be to differentiate the question on the action of the TX and RX UE. |
| LG | ~~Option 2, 3~~Option1, 2 with comment. | ~~Option-1 is not needed as in legacy.~~ We’d like to answer separately TX UE and RX UE sides.If TX UE didn’t transmit an assistant message receiving from RX UE to its serving gNB since last entering RRC\_CONNECTED, option 1 could be a triggering condition. And also, if RX UE didn’t transmit an SL DRX configuration receiving from TX UE to its serving gNB since last entering RRC\_CONNECTED, option 1 could be a triggering condition. In option 1, the phrase ‘configured to provide’ is not necessary. Because, in the case of using SUI, TX/RX UE can understand implicitly by the common configuration of SIB12.Option 2 also can be a triggering condition. According to the agreement in RAN2, when TX UE receives updated assistant information from RX UE, the TX UE should transmit the assistant information to the serving gNB. And also, when RX UE receives updated SL DRX configuration from TX UE, the RX UE should transmit the SL DRX configuration to its serving gNB.  We think option 3 is not the scope of this e-mail discussion. But we can discuss further this issue including the need for further discussion. |
| Vivo | See Comments | If one wants to consider the “NW capability of SL-DRX” as in Opt 3, we prefer not depending on SUI, but using UAI that depends on NW configuration. But if finally SUI is agreed, all the three options may need to be adopted, as they are all involved in the existing SUI trigger conditions.  |
| InterDigital | Option 2 |  |
| Intel | Option 2 | For the aspect raised by Xiaomi on NW support of SL DRX, we think it can be discussed, but fundamentally, it makes sense to trigger this reporting when SL DRX configuration is updated by peer UE |
| Apple | Option 2 |  |
| Spreadtrum | Option 2 |  |
| NEC | Option 1, 2 | Share the same view with LG. |
| Samsung | Option 1, 2 |  |
| Qualcomm | Option 1, 2 | If Tx UE receives SL DRX Config or UE Assistance info from Rx UE* Option 2;

Else* Option 1
 |
| Lenovo | Option 2 |  |
| ZTE | Option 1,2 |  |

**[Summary]:** Option 1: 7/16, Option 2: 16/16. All companies support triggering condition of option 2. Rapporteur thinks that CATT proposed 2a and 2b makes sense as RxUE would only send, upon change, the assistance information to TxUE. Some variations of Option 1 could be needed to cover the “initial reporting” of UE towards its gNB, which can be further discussed.

**[Proposal 2]:** **UE reports sidelink DRX configuration to its serving gNB, upon change of sidelink DRX configuration information received from the peer UE.**

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

**Open issue 3**: On capturing the conditions for UE behaviour to provide sidelink DRX configuration and sidelink DRX assistance information triggered by E-UTRA RRCConnectionReconfiguration message:

Rapporteur assumes that cross-RAT behaviours would be aligned with intra-RAT case. The below question is to confirm if this is the common understanding.

**Q4: Would your company agree that the cross-RAT triggering behaviour would be aligned with intra-RAT behaviour, regarding UE providing sidelink DRX configuration and sidelink assistance information** **to its serving gNB?**

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| --- | --- | --- |
| **Company** | **Agree/Disagree** | **Further comments** |
| OPPO | Agree |  |
| Xiaomi | Comments | We don’t see spec impact. There is no specific trigger for cross-RAT triggering. |
| Sharp | Agree |  |
| CATT | Agree |  |
| Ericsson | This is not in the WID scope.  | As far as we can see from the WID, the cross-RAT feature is not in the scope of this WI and we do not see the point of aligning this with the intra-RAT case. We think that spec should not be changed to accommodate this case. |
| LG | Agree | For expanding the utilization of the new feature in rel-17 (SL DRX), the cross-RAT triggering behavior would be aligned with intra-RAN behavior ~~For utilization the new feature in rel-17 (SL DRX), the cross-RAT triggering behaviour would be aligned with intra-RAN behaviour There will be no spec impact.~~  |
| Vivo | See comments | If the support of SL-DRX for LTE control of NR SL comes for free w/o extra standard efforts, it is fine for us to support this scenario. But we want to ensure that no cross-RAT *specific* design or Spec impact is further discussed/introduced. If this cannot be ensured, we disagree to support this scenario.  |
| Huawei, HiSilicon | Agree |  |
| InterDigital | See comments | We agree with Ericsson. |
| Intel | Agree | We think that while the point made by Ericsson is noteworthy, we do not see any big issue to align the cross-RAT behaviour without any big spec impact. |
| Apple | Yes with comment | We also agree that this is not in the scope of current WID, and since there is no spec impact, we are also fine to not capture any agreement on this. |
| Spreadtrum | Agree |  |
| NEC | See comments | Agree with Ericsson. |
| Samsung | See comments | Same position as Vivo. |
| Qualcomm | Comment | Out of WID scope. But OK, if no spec impact. |
| Fraunhofer | Agree |  |
| Lenovo | Agree | Fine to extend to cross-RAT case if no spec change |
| ZTE | Agree | OK if no spec impact. |

[**Summary**] 11 companies agree on that “the cross-RAT triggering behaviour would be aligned with intra-RAT behaviour, regarding UE providing sidelink DRX configuration and sidelink assistance information to its serving gNB” and 10 companies emphasize that “”no spec impact is foreseen”. 4 companies also point out this issue is out of the scope of WID. For RRC running CR perspective, there is no much need to capture anything for this case and no proposal is given.

**Open issue 4**: On “Editor’s note: How IDLE/INACTIVE/OOC UE set the sl-DRX-ConfigUC-PC5 is FFS” in clause 5.8.9.1.2 [1]:

It is agreed that “For unicast, for IDLE/INACTIVE/OOC TX UE, RAN2 confirms that sl-drx-StartOffset and sl-drx-SlotOffset are configured to RX UE by TX UE implementation”, and “Inactivity timer is not (pre)configured per QoS profile for unicast in IDLE/INACTIVE or OOC case”. It can be discussed, if UE is in IDLE/INACTIVE or OOC, how to set *sl-DRX-ConfigUC-PC5.*

**Q5: Which option would your company support on how IDLE/INACTIVE/OOC UE set the *sl-DRX-ConfigUC-PC5*?**

**Option 1: It is up to TX UE implementation.**

**Option 2: others, please elaborate.**

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| **Company** | **Option** | **Further comments** |
| OPPO | 1 | It should/must be option-1 given the existing agreement? |
| Xiaomi | Option 1 |  |
| Sharp | Option 1 | UE implementation is preferred. |
| CATT | Option 1 |  |
| Ericsson | Option 1 |  |
| LG | Option 1 |  |
| vivo | 1 | At least there were explicit agreements for the SL Inactivity Timer which is UE implementation specific in this case. |
| Huawei, HiSilicon | Option 1 |  |
| InterDigital | Option 1 |  |
| Intel | Option 1 |  |
| Apple | Option 1 |  |
| Spreadtrum | Option 1 |  |
| NEC | Option 1 |  |
| Samsung | Option 1 |  |
| Qualcomm | Option 1 |  |
| Fraunhofer | Option 1 |  |
| Lenovo | Option 1 |  |
| ZTE | Option 1 |  |

**[Summary]:** all companies support Option 1.

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

**Open issue 5**: “Editor’s Note: FFS if it is needed to capture above UE behaviour in IDLE/INACTIVE or OOC.” In clause 5.8.9.X.3 [1]:

This EN is based on company comment on the running CR, it can be discussed/confirmed regarding this UE behaviour.

**Q6: Which option would your company support, regarding capturing UE behaviour in IDLE/INACTIVE or OOC in clause 5.8.9.X.3 [1]:**

**Option 1: Keep the behaviour description and remove EN**

**Option 2: Keep the EN and leave it to further discussion.**

**Option 3: Others, please elaborate.**

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| --- | --- | --- |
| **Company** | **Option** | **Further comments** |
| **OPPO** | **1 with comment** | **Given the conclusion on Q5, the EN can be removed, and the text in 5.8.9.X.3 can be updated (i.e., not limited to inactivity timer)**For sidelink unicast, when a UE in IDLE/INACTIVE or OOC has obtained this assistance information from its peer UE, it may derive the value of the inactivity timer based on its implementation. |
| **Xiaomi** | **Option 1** | **It’s up to UE implementation how to consider assistance information to determine the SL DRX.** |
| **Sharp** | **Option 1** |  |
| **CATT** | **Option 1** | We prefer the description as below:For sidelink unicast, when a UE in IDLE/INACTIVE or OOC has obtained this assistance information from its peer UE, it may derive the value ~~of the inactivity timer~~ for SL DRX based on UE implementation. |
| Ericsson  | Option 1 |  |
| LG | ~~Option 1~~ Option 3 | It’s better to write down after the other parameter of TX UE except for the inactivity timer is decided in the RAN2 meeting. In the case of a UE in OoC, there is no clear agreement whether TX UE can decide all the parameters or the parameters can be decided by pre-configuration. We think it needs to be discussed as an open issue whether the other parameters except for an inactivity timer of UE in OoC can be decided by TX UE implementation. |
| Vivo | 1 |  |
| Huawei, HiSilicon | Option 1 | Agree with CATT. |
| InterDigital | Option 1 |  |
| Intel | Option 1 |  |
| Apple | Option 1 |  |
| Spreadtrum | Option 1 |  |
| NEC | Option 1 |  |
| Samsung | Option 1 |  |
| Qualcomm | Option 1 |  |
| Fraunhofer | Option 1 |  |
| Lenovo | Option 1 |  |
| ZTE | Option 1 |  |

**[Summary]** All but one company support Option 1 “Keep the behaviour description and remove EN”. There are different opinions on updating the behaviour description to whether also cover the whole SL DRX, which would be covered by above Proposal 4. It is rapporteur’s understanding that, upon receiving assistance information from RxUE, it would be better for TxUE implementation to determine SL DRX related parameters, rather than following a “static” pre-configuration.

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

**Open issue 6**: “Editor’s note: FFS extension marker for SL-PHY-MAC-RLC-Config-v17xy is needed or not.” in clause 6.3.5 [1]:

Rapporteur wants to have a quick check with companies on whether or not to remove this EN:

**Q7: Which option would your company support, regarding above EN/extension marker issue:**

**Option 1: Use an extension marker.**

**Option 2: Not to use an extension marker.**

**Option 3: Others, please elaborate.**

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| **Company** | **Option** | **Further comments** |
| OPPO | 1 | This is the key point to make the 17xy extension to be future proof. |
| Xiaomi | Option 1 | May be good for future extension. |
| Sharp | Option 1 | It is good for future proof. |
| CATT | Option 1 | It is good for future proof. |
| Ericsson | No strong view | We can go with majority |
| LG | Option 1 | It is good for future proof. |
| vivo | No strong view | Rapp can decide which way to go. |
| Huawei, HiSilicon | Option 1 |  |
| InterDigital | Option 1 |  |
| Intel | No strong view | Ok to go with majority view |
| Apple | 1 |  |
| Spreadtrum | Option 1 |  |
| NEC | No strong view | Ok to go with majority view |
| Qualcomm | No strong preference | OK with majority |
| Fraunhofer | Option 1 |  |
| Lenovo | No strong view |  |
| ZTE | No strong view |  |

**[Summary]** Using extension marker can be acceptable for the majority of companies.

**[Proposal 6] Use an extension marker for SL-PHY-MAC-RLC-Config-v17xy.**

**Other stage-2 open issues:**

# Conclusion

**Proposal 1: UE uses SUI to report sidelink DRX configuration or sidelink assistance information to its serving gNB.**

**[Proposal 2]:** **UE reports sidelink DRX configuration to its serving gNB, upon change of sidelink DRX configuration information received from the peer UE.**

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

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

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

**[Proposal 6] Use an extension marker for SL-PHY-MAC-RLC-Config-v17xy.**

# Reference

1. R2-2111417, RRC running CR for NR Sidelink enhancement, Huawei, HiSilicon
2. R2-2111298, Report from session on LTE V2X and NR SL, Session Chair (Samsung)
3. 3GPP TS 38.331 v16.6.0

Annex - Collection of RAN2 agreements on NR SL Enhancements

Cyan highlight – agreement captured in stage-2 specifications

Green highlight – shall be captured in MAC spec.

Yellow highlight – captured in RRC spec

No highlight – agreement with no direct impact on specifications

RAN2#113-e agreements

Agreements on SA2’s questions:

1: For Q1, RAN2 reply AS layer can determine DRX parameters and no additional input from V2X layer other than the currently available QoS is needed.

2: RAN2 confirms that for unicast, the PC5 DRX may be negotiated between the UEs in AS layer. We can also include this RAN2 confirmation into the response LS.

3: For Q2, RAN2 further reply that for SL unicast, other than DRX parameter negotiation/sharing reason, AS layer can provide the PC5 DRX related information to the V2X layer, and RAN2 is working on the detailed DRX parameter that applies to each cast type. RAN2 would keep SA2 being update on the RAN2 progress.

4: For Q3, RAN2 reply that RAN2 does not think it is beneficial for broadcast and groupcast to share the PC5 DRX related information amongst UEs in the vicinity in V2X layer.

5: For Q4, RAN2 reply that RAN2 is working on this aspects following the WID bullet of “Specify mechanism aiming to align sidelink DRX wake-up time with Uu DRX wake-up time in an in-coverage UE”, RAN2 would keep SA2 updated on related working progress.

Agreements on high-level principles for SL DRX

1: For SL unicast (after SL unicast link is established), SL DRX configuration can be configured per a pair of source/destination. FFS whether SL DRX operates per direction or for both directions.

2: For SL groupcast/broadcast, SL DRX configuration can be configured in common. FFS on granularity of SL DRX configuration.

3: Short DRX cycle is not introduced for SL unicast, groupcast and broadcast in Rel-17.

4: For data reception, RAN2 defines the behaviour for monitoring the SCI reception (i.e., PSCCH and 2nd SCI on PSSCH) during the SL active time for SL DRX. For data reception, the UE may skip monitoring of PSCCH and 2nd SCI on PSSCH during inactive time for SL DRX. Sensing aspect is not considered in this agreement.

5a: At least, On-duration timer and Inactivity timer are supported in SL unicast.

5b: HARQ RTT is supported in SL unicast. FFS for the detailed condition when it is supported. FFS whether HARQ RTT is explicitly configured or can be based on SCI. FFS on the need of HARQ retransmission timer.

6a: At least, on-duration timer is supported for SL groupcast. FFS for the need and detailed condition when inactivity timer is supported.

6b: HARQ RTT is supported in SL groupcast. FFS for the detailed condition when it is supported. FFS whether HARQ RTT is explicitly configured or can be based on SCI. FFS on the need of HARQ retransmission timer.

7: At least, on-duration timer is supported for SL broadcast.

8: SL DRX Command MAC CE is introduced for SL DRX operation in unicast. FFS on the need of groupcast. FFS on the detailed UE behaviour (including relation to inactivity timer).

9: In mode 1, when in RRC\_CONNECTED, if DRX is configured, the MAC entity monitors the PDCCH for the MAC entity's SL-RNTI, SLCS-RNTI and SL Semi-Persistent Scheduling V-RNTI in Uu DRX Active Time. MAC entity does not need to monitor the PDCCH for the MAC entity's SL-RNTI, SLCS-RNTI and SL Semi-Persistent Scheduling V-RNTI in Uu DRX in-active Time.

Agreements on SL DRX configurations

1: For broadcast/groupcast, for out-of-coverage case, TX-UE/RX-UE obtain DRX configuration from pre-configuration.

2: For broadcast/groupcast, for in-coverage case, RRC\_IDLE/INACTIVE TX-UE/RX-UE obtain DRX configuration from SIB. It is up to network implementation how to coordinate active time between different cells.

3: For broadcast/groupcast, for in-coverage case, for RRC\_CONNECTED TX-UE/RX-UE can obtain DRX configuration from SIB. FFS on whether dedicated-RRC is also used.

4: For unicast, for OOC scenario, the UE who sends out the DRX configuration decides on the DRX configuration. FFS on whether pre-configuration and/or the assistance information from the peer UE is also taken into account when determining the DRX configuration.

5: For unicast, for OOC scenario, adopt per-direction DRX configuration is as baseline. FFS on whether it is TX-centric or Rx-centric, i.e. TX UE or RX UE decides it.

Agreements on granularity of SL DRX operation for groupcast/broadcast

1: RAN2 kindly agree that for groupcast and broadcast communication further granularity to multiple sets of DRX configurations (beyond just cast type) is required i.e. more than two DRX Cycle configurations should be supported in specification.

2: RAN2 will study/discuss how PQI and/or L2 destination ID is used to derive groupcast and broadcast DRX configuration.

Agreements on SL DRX on groupcast/broadcast

1: Timer-based SL DRX is also applied to SL groupcast/broadcast.

RAN2#113bis-e agreements

Agreements on details of timer

1: The following parameters are supported as part of the SL DRX configuration for all cast types: sl-drx-StartOffset, sl-drx-Cycle, sl-drx-onDurationTimer, and sl-drx-SlotOffset.

2: The RX UE determines the symbol/slot/subframe associated with the start of the DRX cycle using the configured sl-drx-Cycle, sl-drx-StartOffset. FFS on details.

3: The RX UE starts the sl-drx-onDurationTimer after sl-drx-slotOffset from the beginning of the subframe.

4: The RX UE’s active time includes the time in which sl-drx-on-DurationTimer is running.

5: For unicast, the TX UE behaviors should be specified to keep aligned with the RX UE regarding the DRX Active time. FFS the specific Spec impacts needed at the TX side.

6: For unicast, the RX UE maintains a separate SL inactivity timer for each pair of src/dest L2 ID.

7: For unicast, the SL inactivity timer value may take into consideration the QoS. Whether any specification impacts are needed is FFS.

8: For unicast, RX UE starts/restarts the inactivity timer with the value configured for that pair of src/dest L2 ID.

9: For unicast, the RX UE (re)starts the inactivity timer upon reception of a new SL data transmission from the RX UE perspective for that pair of src/dest L2 ID.

 10: For unicast, the RX UE (re)starts the inactivity timer based on information in SCI (SCI1+SCI2). FFS if the MAC layer can stop the inactivity timer.

11: For unicast, the RX UE (re)starts the inactivity timer in the first slot after SCI (SCI1+SCI2) reception.

12: For unicast, the TX UE maintains a timer corresponding to the SL Inactivity timer in the RX UE for each pair of src/dest L2 ID, and uses the timer as part of criterion for determining the allowable transmission time for the RX UE.

13: For unicast, the TX UE (re)starts its timer corresponding to the SL inactivity timer at the RX UE at the slot following an SCI transmission indicating a new data transmission. FFS the specific spec impacts needed at the TX side.

14: SL Inactivity timer is supported for groupcast. FFS on the scenarios where it is supported.

15: SL Inactivity timer is not supported for broadcast transmissions.

16: The RX UE is active on sidelink (monitors SCI1+SCI2) as long as at least one of the SL inactivity timers associated with unicast or groupcast (if supported) is running.

17: As a baseline, agreements 7-13 inclusive are applied to SL inactivity timer for groupcast, with the difference that “src/dest L2 ID pair” is replaced with “groupcast L2 destination ID or src/dest L2 id pair” (dependent on the conclusion of proposal 17). Any specific handling which may be needed for synchronization of inactivity timers for the groupcast case is FFS.

18: SL HARQ RTT timer and SL HARQ retransmission timer are maintained per SL HARQ process at the RX UE.

19: Working assumption: SL HARQ RTT timer can be derived from the retransmission resource timing when the SCI indicates a retransmission resource. FFS whether explicitly configured SL HARQ RTT timer may be still required. If big problem is identified next meeting, we can revisit it.

20: The value(s) of the SL HARQ RTT Timer, when explicitly configured and not determined via SCI (if agreed to do so), is determined by UE or NW implementation.

21: For unicast, sidelink retransmission timer can be supported for at least some cases of HARQ disabled transmissions. FFS whether HARQ RTT is supported or not.

22: For transmissions with HARQ feedback, the RX UE starts the SL HARQ RTT timer in the symbol/slot following the end of PSFCH transmission.

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

24: For cases where there is some uncertainty in the timing of a retransmission for a HARQ process (e.g. due to no retransmission resource indicated in the SCI, or possible reselection by the TX UE) the RX UE uses a configured retransmission timer.

25: Retransmission timer can be started upon expiry of the HARQ RTT timer.

26: The value(s) of the SL retransmission timer can be determined by UE or NW implementation.

27: The SL active time of the RX UE includes the time in which any of its applicable sl-drx-OnDuration(s), sl-DRXInactivityTimer(s), or sl-drx-RetransmissionTimer(s) are running.

28: Working assumption: The slots when the UE is expected CSI report following a CSI request is considered as SL active time.

29: RAN2 assumes LCP enhancements for ensuring a TX UE transmits data in the active time of an RX UE are needed. FFS on the resource (re)selection enhancements (e.g. limiting the resources to the active time for peer UE).

Agreements on alignment between Uu DRX and SL DRX

1: Alignment of Uu DRX and SL DRX for unicast is supported. FFS on how alignment is achieved.

2: Alignment of Uu DRX and SL DRX for groupcast and broadcast is supported. FFS on whether new mechanisms are needed.

3: Alignment of Uu DRX and SL DRX for UE in RRC CONNECTED shall be a baseline.

4: The alignment of Uu DRX and SL DRX of the same UE shall be considered.

RAN2#114-e agreements

Agreements on TX-UE centric or RX-UE centric DRX configuration determination

1: In SL unicast, for DRX configuration of each direction where one UE as Tx-UE and the other UE as Rx-UE, support signalling exchange including both 1) Signaling-1: signalling from RX-UE to TX-UE, and 2) Signaling-2: signalling from TX-UE to RX-UE.

2: For SL unicast, TX-UE centric DRX configuration based on the assistance information from RX-UE is agreed as baseline.

2a: In SL unicast, for DRX configuration of each direction where one UE as Tx-UE and the other as Rx-UE, signaling-1 (Rx->Tx) is carried via a new PC5-RRC message, from Rx-UE to Tx-UE.

2b: In SL unicast, for DRX configuration of the direction where one UE as Tx-UE and the other as Rx-UE, signaling-2 (Tx->Rx) is carried via RRCReconfigurationSidelink, to deliver DRX configuration from Tx-UE to Rx-UE.

3: In SL unicast, for DRX configuration of each direction where one UE as Tx-UE and the other UE as Rx-UE, when Tx-UE is in-coverage and in RRC\_CONNECTED state, Tx-UE may report the information received in signaling-1 (Rx->Tx) to the serving network.

4: In SL unicast, for DRX configuration of each direction where one UE as Tx-UE and the other as Rx-UE, when Tx-UE is in-coverage and in RRC\_CONNECTED state, Tx-UE may obtain DRX configuration from dedicated RRC to generate signalling-2 (Tx->Rx).

5: In SL unicast, for DRX configuration of each direction where one UE as Tx-UE and the other as Rx-UE, when Rx-UE is in-coverage and in RRC\_CONNECTED state, Rx-UE report the DRX configuration received in signalling-2 (Tx->Rx) to the serving network.

Agreements on Uu DRX Impact to Support SL

1: SL-specific drx-onDurationTimer is not introduced in Uu.

2: SL-specific drx-InactivityTimer is not introduced in Uu.

3: For Tx UE configured with sidelink resource allocation mode 1, it should start or restart the Uu drx-InactivityTimer if the UE receives a PDCCH indicating a new SL transmission.

4: SL-specific drx-HARQ-RTT-Timer and SL-specific drx-RetransmissionTimer should be introduced in Uu, which are maintained based on sidelink process.

5: When sl-PUCCH-Config is configured, SL-specific drx-HARQ-RTT-Timer and SL-specific drx-RetransmissionTimer should be maintained for UE configured with sidelink resource allocation mode 1.

6: Adopt the following definitions of SL-specific drx-HARQ-RTT-Timer and drx-RetransmissionTimer (the detailed name of the timers can be further discussed):

 - 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 a SL retransmission grant is expected by the MAC entity.

7: When sl-PUCCH-Config is configured (and the PUCCH is transmitted), the UE should start the SL-specific drx-HARQ-RTT-Timer in Uu for the corresponding SL HARQ process in the first slot after the end of the corresponding transmission carrying the SL HARQ feedback via the PUCCH.

Agreements on DRX for SL GC and BC

1: WA: RAN2 assumes that the V2X layer of Rx UE passes the PC5 QoS parameters together with the corresponding destination layer-2 ID(s) for reception to the AS layer, as per TR 23.776 conclusion, and will further discuss SL DRX design based on this working assumption. RAN2 does not need to send LS to SA2 to clarify this issue.

2: For GC/BC, DRX cycle should take at least QoS requirement into consideration.

3: For GC/BC, DRX cycle(s) is configured per QoS profile. FFS on the need of down-select one DRX cycle from available DRX cycles for a specific L2 DST ID if UE has multiple QoS profiles for same DST L2 ID.

4: For GC/BC, DRX cycle is configured per QoS profile.

5a: For GC/BC, RAN2 understands that sl-drx-startoffset does not take QoS requirement into consideration.

5b: For GC/BC, For GC/BC, sl-drx-startoffset is set based on DST L2 ID.

Agreements on alignment between Uu DRX and SL DRX

1: Alignment of Uu DRX and SL DRX for UE may comprise the full overlapping between Uu DRX and SL DRX in time.

2: Alignment of Uu DRX and SL DRX for UE may comprise the partial overlapping between Uu DRX and SL DRX in time.

3: For at least SL RX-UEs in RRC CONNECTED, the alignment of Uu DRX and SL DRX is up to gNB. FFS for SL TX-UE.

4: RAN2 to down-scope alignment of Uu DRX and SL DRX for UEs in RRC IDLE and RRC INACTIVE from Rel-17.

5: In case of Mode 1 scheduling, the alignment of Uu DRX of Tx UE and SL DRX of Rx UE shall be considered. FFS on how alignment is achieved.

Agreements on geolocation based SL DRX

1: Geolocation based SL DRX is not supported in Rel-17.

RAN2#115-e agreements

Agreements on TX profiles:

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

2: RAN2 understand a service type can be mapped to a TX profile, i.e. V2X and ProSe.

3: A TX profile is indicated from upper layer to AS layer. FFS whether a TX profile needs to be provided with service type information or L2 id.

4: For GC/BC, a Rel-17 TX UE shall only assume SL DRX for the RX UEs when the associated TX profile corresponding to support of SL DRX. FFS whether a TX profile needs to be provided with service type information or L2 id.

5: For GC/BC only communication, a Rel-17 RX UE determines SL DRX is used if all service types/L2 ids of interest have an associated TX profile corresponding to support of SL DRX. A Rel-17 RX UE enables SL DRX operation for a service type/L2 id with the associated TX profile.

6: For UC, for SL transmissions after PC5-RRC connection is established, no backward compatibility issue of SL DRX is assumed, i.e. backward compatibility is handled based on PC5-RRC UE capability signalling.

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

Agreements on Uu DRX timer impacts:

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

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

3: SL-specific drx-RetransmissionTimer is started at the first symbol after the end of last PSSCH resource scheduled through one DCI (with the assumption RAN2 agrees not to support SL-specific drx-HARQ-RTT-Timer but to support SL-specific drx-RetransmissionTimer when sl-PUCCH-Config is not configured, when sl-PSFCH-Config is configured). FFS the SL-specific drx-RetransmissionTimer is started at the first slot after the end of last PSSCH resource scheduled through one DCI instead.

4: SL-specific drx-RetransmissionTimer is started at the first symbol after the end of last PSSCH resource scheduled through one DCI (with the assumption RAN2 agrees not to support SL-specific drx-HARQ-RTT-Timer but to support SL-specific drx-RetransmissionTimer when sl-PUCCH-Config is not configured, when sl-PSFCH-Config is not configured). FFS the SL-specific drx-RetransmissionTimer is started at the first slot after the end of last PSSCH resource scheduled through one DCI instead.

Agreements on SL DRX timer maintenance:

1: Inactivity timer is not (pre)configured per QoS profile for unicast in IDLE/INACTIVE or OOC case.

2: In groupcast, the RX UE maintains a separate inactivity timer for each L2 Destination ID.

3: SL inactivity timer can be supported for all scenarios of groupcast.

4: Stopping the inactivity timer to handle L1/L2 mismatch is not supported.

5: Specifying mechanisms to use HARQ feedback to handle Inactivity timer mismatch between TX and RX UE (for unicast and groupcast) is not considered in this release.

6: Restarting the inactivity timer at the TX UE is not needed upon transmission of an SCI indicating a retransmission.

7: Inactivity timer can be used for unicast whether HARQ feedback is enabled or disabled.

8: For groupcast, the TX UE restarts its timer corresponding to inactivity timer for the L2 destination ID (used for determining the allowable transmission time) upon reception of new data with the same destination ID.

9: HARQ RTT is supported for both HARQ enabled and HARQ disabled cases by allowing HARQ RTT timer to be set to different values. FFS on the specific values that can be used for HARQ disabled case.

10: Regardless of whether there is uncertainty or not, in the timing of a retransmission for a HARQ process the RX UE uses a retransmission timer.

11: For unicast and groupcast, retransmission timer value is configurable.

12: SL HARQ RTT timer and SL Retransmission timer are not used for broadcast transmissions.

13: When data is available for transmission to one or more RX UE in DRX, TX UE selects the resources taking into account the active time (current or future) of the RX UE(s) determined by the timers maintained at the TX UE. Details are FFS. FFS whether RAN1 or RAN2 implement this restriction. Send LS to RAN1.

14: For unicast, the TX UE selects the resources for the initial transmission associated with any active time (e.g. on duration timer or inactivity timer, or retransmission timer) at the RX UE. How to handle cases when a transmission may cause these timers to be running at the RX UE is FFS. FFS on groupcast. FFS on whether any spec impact.

15: For unicast, the TX UE can select the resources for the retransmission associated with any active time (e.g. on duration timer or inactivity timer, or retransmission timer) at the RX UE. How to handle cases when a transmission may cause these timers to be running at the RX UE is FFS. FFS on groupcast. FFS on whether any spec impact.

16: For broadcast, the TX UE can select the resources for the initial transmission associated with any active time supported by broadcast (i.e. on duration timer) at the RX UE.

17: For broadcast, the TX UE can select the resources for the retransmission associated with any active time supported by broadcast (i.e. on duration timer) at the RX UE.

Agreements on SL DRX configuration for UC:

1: For determining SL DRX configuration by TX UE, SL DRX capable RX UE is not mandatory to provide the SL DRX assistance information to TX UE. FFS on the interpretation if assistance information is not provided.

2: For SL unicast, RX UE may include its desired SL DRX configuration in the assistance information which is transmitted to TX UE.

3: For SL unicast, RX UE may send the SL DRX assistance information to TX UE when the previously transmitted SL DRX assistance information has changed.

4: For unicast, a two-step process (i.e., RX UE accepts or rejects TX UE’s suggestion) is adopted as a baseline, i.e., FFS on the following TX/RX UE behaviours when reject happens.

 • Step 1: TX UE sends RRCReconfigurationSidelink containing a SL DRX configuration to be applied by RX UE to RX UE

 • Step 2: RX UE replies with a PC5-RRC signalling indicating acceptance or rejection for the SL DRX configuration. FFS on whether the new rejection cause for SL DRX needs to be defined. FFS on whether RRCReconfigurationFailureSidelink or RRCReconfigurationCompleteSidelink is used in Step 2.

5: For unicast in IDLE/INACTIVE or OOC, in case there is no SL DRX assistance information received from RX UE, TX UE derives the value of the inactivity timer based on its implementation. FFS on the interpretation if assistance information is not provided.

6: For unicast in IDLE/INACTIVE or OOC, if TX UE has obtained assistance information from RX UE, TX UE derives the value of the inactivity timer based on its implementation.

Agreements on SL DRX configuration for GC/BC:

1: For SL BC and GC, for in-coverage case, RRC\_CONNECTED TX-UE/RX-UE can obtain DRX configuration from 1) SIB which is delivered via dedicated RRC signalling as in legacy, and from 2) from dedicated RRC signalling during handover, i.e., in an RRCReconfiguration message including reconfigurationWithSyn. Otherwise, RRC\_CONNECTED TX-UE/RX-UE does not expect DRX configuration from dedicated RRC signalling.

2: For BC/GC, the on-duration timer length and inactivity timer length (only for GC) are configured per QoS profile.

3: For GC, do not pursue per-QoS or per-L2-ID configuration for RTT timer length and retransmission timer length.

4: For BC/GC, default DRX configuration(s) can be used for QoS profile(s) which cannot be mapped into DRX configuration configured for the dedicated QoS profile(s).

5: For BC/GC, do not pursue DRX command MAC CE in Rel-17.

Agreements on other remaining issues:

1: For SL unicast, UE stops on-duration timer and inactivity timer for the unicast link where SL DRX MAC CE is received from peer UE.

2: When TX UE sends SL DRX MAC CE is up to UE implementation.

3: For unicast, SL BC DRX configuration is applied for DCR message [20/22]. FFS on whether default SL BC DRX configuration or which SL BC DRX configuration for DCR message should be used.

4: Working assumption: DRX configuration for V2X group management signaling is out of RAN2 scope.

5: For unicast, if serving gNB of a RRC\_CONECTED TX UE determines the DRX configuration of RX UE, TX UE should send the unicast DRX configuration to the RX UE upon receiving the corresponding DRX configuration from the serving gNB.

6: For unicast, when to send the DRX configuration to RX UE is up to TX UE implementation for the case that TX UE determines the DRX configuration of the RX UE, i.e. TX UE can send the DRX configuration to RX UE without any restriction.

7: For GC, it’s up to UE implementation to determine when the DRX configuration for SL GC communication is applied, i.e. no spec impact.

8: For BC, it’s up to UE implementation to determine when the DRX configuration for SL BC communication is applied, i.e. no spec impact.

RAN2#116-e agreements (to be captured)

Agreement on SL DRX design:

1: Previous RAN2 WA “SL DRX should take PSCCH monitoring also for sensing (in addition to data reception) into account if SL DRX is used” is dropped.

Agreements on SL-DRX for ProSe:

1: RAN2 confirm R17 SL-DRX design can support non-relay-related ProSe communication directly without additional specific solution discussion / specification effort.

2: RAN2 confirm the R17 SL-DRX design can support non-relay-related ProSe discovery by reusing SL default-DRX configuration used for communication without further additional specific solution discussion / specification effort.

Agreements on SL-DRX for ProSe:

1: RAN2 confirms Rel-17 SL-DRX design can be reused for relay-related ProSe communication in layer-3 relay without additional specific solution discussion/specification effort.

2: Keep RAN2 previous agreement (prioritize the non-relay case without consideration of relay specific optimization in Rel-17) but we’re not going to make any conclusion if L2 relay-related ProSe communication is supported or not in Rel-17 now.

3: RAN2 confirms Rel-17 SL-DRX design can be reused for L3 relay-related ProSe discovery without additional specific solution discussion/specification effort (by applying SL default-DRX configuration). No conclusion if L2 relay-related ProSe discovery is supported or not in Rel-17 now. RAN2 does not specify any restriction now.

4: Will include the agreement above in addition to all other related agreements made last week and from this offline discussion into the response LS to SA2.

Agreements on HARQ RTT:

1: RAN2 confirms the working assumption: “SL HARQ RTT timer can be derived from the retransmission resource timing when the SCI indicates a retransmission resource”

Agreements on HARQ RTT:

1: One-to-one mapping is needed between Tx and Rx resource pools for derivation of SCI-based RTT timer. We do not need to specify it.

2: In case RAN2 pursue the SCI based RTT timer, UE only use the immediately next retransmission resource indicated in SCI to derive a single RTT value.

Agreements on SL DRX for mode 1:

1: For the issue that a mode-1 SL grant being provided by network to Tx-UE yet it is not in SL active time of any destination that has data to be sent, for initial transmission, drop the grant. FFS if any spec change.

2: For the issue that a mode-1 SL grant being provided by network to Tx-UE yet it is not in SL active time of any destination that has data to be sent, for retransmission, drop the grant.

Agreements on identified FFSs:

1: The onduration timer should be included in the RX UE’s desired SL DRX configuration.

2: The DRX start offset should be included in the RX UE’s desired SL DRX configuration.

3: The DRX cycle should be included in the RX UE’s desired SL DRX configuration.

4: When TX UE doesn’t receive any assistance information from RX UE, TX UE considers that RX UE is ok with any DRX configuration (including no DRX configuration).

5: For GC, when performing the down-selection of the inactivity timer, select the inactivity timer whose inactivity timer length is the largest one (among multiple ones for the corresponding L2 id) as the selected inactivity timer.

6: Common default SL DRX configuration should be used for BC/GC.

7: The default SL DRX configuration for BC/GC can be used for the DCR message. FFS for UC (at least for the initial message).

8: RAN2 confirms that DRX configuration for V2X group management signaling is out of RAN2 scope. No additional new mechanism is needed.

9: A Tx profile identifies one or more sidelink feature groups.

10: When sl-PUCCH-Config is configured but the PUCCH is not transmitted e.g. due to UL/SL prioritization, the starting timing of SL-specific drx-HARQ-RTT-Timer is referring to symbol.

11: RAN2 agree to revise the agreement made in RAN2#114-e as below:

 “When sl-PUCCH-Config is configured (and the PUCCH is transmitted), the UE should start the SL-specific drx-HARQ-RTT-Timer in Uu for the corresponding SL HARQ process in the first ~~slot~~symbol after the end of the corresponding transmission carrying the SL HARQ feedback via the PUCCH.”

12: In case of SL-specific drx-HARQ-RTT-Timer is not supported but to support SL-specific drx-RetransmissionTimer, the starting timing of SL-specific drx-RetransmissionTimer is referring to symbol.

13: It is up to Rx UE’s implementation to determine its desired SL DRX configuration.

14: The SL DRX assistance information request from Tx UE to Rx UE is not supported in the current release.

15: Working assumption: Option2 (Need of down-selection for DRX cycle and on-duration) for GC/BC when multiple QoS profiles are associated with the same DST L2 ID.

Agreements on DRX timer length and start time:

1: For UC/GC/BC, the units of Uu DRX timers are taken as baseline for the following SL-DRX parameters:

 - sl-drx-LongCycle and sl-drx-StartOffset in millisecond.

 - sl-drx-onDurationTimer in multiples of 1/32 ms (subMilliSeconds) or in ms (milliSecond).

 - sl-drx-SlotOffset in multiples of 1/32 ms.

 - sl-drx-InactivityTimer in multiple integers of 1 ms.

2: For unicast/groucast/broadcast, for sl-drx-HARQ-RTT-Timer, the granularity of starting time is at slot-level and the length is also configured in number of slots.

3: For unicast/groucast/broadcast, for sl-drx-RetransmissionTimer, the granularity of starting time is at slot-level and the length is also configured in number of slots.

4: The SL DRX timers should be calculated in the unit of physical slot. FFS whether the case may happen that no SL slots are available in UE’s active time and whether/how to solve it.

5: Similar to Uu, the start of SL-DRX cycle is calculated by the following formula:

 [(DFN × 10) + subframe number] modulo (sl-drx-Cycle) = sl-drx-StartOffset

6: For unicast, for CONNECTED TX UE, RAN2 confirms that sl-drx-StartOffset and sl-drx-SlotOffset are configured to RX UE by TX UE based on gNB configuration.

7: For unicast, for IDLE/INACTIVE/OOC TX UE, RAN2 confirms that sl-drx-StartOffset and sl-drx-SlotOffset are configured to RX UE by TX UE implementation.

8: For groucast and broadcast, an equation is introduced to derive sl-drx-startoffset based on DST L2 ID.

9: RAN2 to select one of the following options to determine the sl-drx-startoffset:

 Option-1:

 - n=DST L2 ID MOD N, where N is the total number of sl-drx-startoffset values, and n is an index in the N sl-drx-startoffset values.

 Option-5:

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

 - FFS: sl-drx-SlotOffset

10: For groucast and broadcast, sl-drx-SlotOffset is also set based on DST L2 ID (i.e., similar to sl-drx-StartOffset).

Agreements on need of additional new considerations:

1: A new MAC CE to indicate DRX operation suspend/resume is not supported in Rel-17 (related to R2-2109722).

2: SL DRX configuration for SL groupcast including multiple settings for the SL DRX ON duration is not supported in Rel-17 (related to R2-2109812).

3: Inactivity timer maintenance rules for groupcast transmissions with MCR is not supported in Rel-17 (related to R2-2109937).

4a: In Rel-17, RX UE filtering based on SL-DRX shall not be specified and enforced. RX UE is allowed to receive and process incoming traffic which does not exactly match SL DRX configurations (related to R2-2110062).

4b: RAN2 to confirm that no specification change is needed for supporting 4a.

5: For GC, number of group members does not need to be considered in the determination of SL DRX on-duration and inactivity timers in the scenario where the UE knows it in Rel-17 (related to R2-2110938).

6a: An SL UE capability, representing the amount of time a UE needs to process SL grant and prepare data transmission, is not needed to be indicated by the UE to its serving gNB (related to R2-2111119).

6b: RAN2 to confirm that no specification change is needed for indicating SL traffic characteristics and associated QoS requirement to the SL TX UE’s gNB for determining SL DRX On duration.

Agreements on SL DRX for SL CSI reception:

1: Confirm the WA: The slots when the UE is expected CSI report following a CSI request is considered as SL active time.

2: Active time for SL-CSI reception is defined with description. Active time includes the time between SL-CSI request is sent and SL-CSI report reception or period of sl-LatencyBound-CSI-Report.

3: Ambiguous time is not introduced on sidelink for SL-CSI report.

Agreements on candidate resource selection and HARQ RTT:

1: TX UE shall select initial transmission resource only in the RX UE’s active time where SL DRX timers are running now or will be running in future (at least on-duration timer). Further details of active time can be considered later. FFS on spec impact.

2: If RAN 2 agrees that TX UE shall select initial transmission resource only in the RX UE’s active time, it is applied for all cast types.

3: For each SL grant, the grant is used if it is in active time of at least one destination; otherwise the grant is skipped.

4: Regardless whether HARQ feedback is enabled or disabled, the HARQ RTT timer can be derived based on the resource assignment information for retransmission of the same TB in the SCI if the resource assignment information for retransmission of the same TB is present.

5: When HARQ feedback is disabled, either zero value or non-zero value can be configured for the HARQ RTT timer if the resource assignment information is not present. FFS on details of configuration.

6: Always set the value of the retransmission timer to be a configured value regardless how the UE sets the HARQ RTT timer.

7: MAC indicates the active time information to PHY.

8: It is up to RAN1 to select an option.

9: We will send LS to inform RAN1 of the related agreements from this offline discussion [706]