**3GPP TSG RAN WG1 #110bis-e R1-2210286**

**Electronics Meeting, 10 – 19 October, 2022**

**Source: Moderator (OPPO)**

**Title: FL summary #2 for AI 8.11: R17 eSL power saving RA maintenance**

**Agenda item: 8.11**

**Document for:** **Discussion and Decision**

Introduction

According to the outcome of the preparation phase discussion declared by the session chair, the following R17 eSL power saving RA issues are identified as high priority and editorial for maintenance to be treated in this meeting.

[110bis-e-R17-Sidelink-03] Email discussion for maintenance on resource allocation for power saving for the following issues in R1-2210333 – Kevin (OPPO)

* Issues 1-6, 1-7, 1-9
* Editorial issues for providing to spec editors: issues 1-15, 1-16, 1-17
* Check points: October 14, October 19

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| **Issue#** | **Issue** | **References** |
| 1-6 | **Clarification on the min number of Y and Y’ slots**  In the higher layer parameter section (before Step 1)  - Optionally, minimum number of *Y* slots as (*sl*-*MinNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the candidate resources corresponding to periodic-based partial sensing operation for periodic transmissions. [5]  - Optionally, minimum number of *Y* slots as (*sl*-*MinNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the candidate resources corresponding to periodic-based partial sensing for resource (re)selection triggered by periodic transmission. [7]  - Optionally, minimum number of *Y* slots as (*sl*-*MinNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the candidate resources if Prsvp\_TX≠0. [9]  - Optionally, minimum number of *Y* slots as (*minNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the resources corresponding to periodictransmission. [27]  - Optionally, minimum number of slots as (*sl*-*MinNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources corresponding to contiguous partial sensing operation for aperiodic transmissions. [5]  - Optionally, minimum number of slots as (*sl*-*MinNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources corresponding to periodic-based partial sensing and/or contiguous partial sensing for resource (re)selection triggered by aperiodic transmission. [7]  - Optionally, minimum number of slots as (*sl*-*MinNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources if Prsvp\_TX=0. [9]  - Optionally, minimum number of slots as (*sl*-*MinNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources corresponding to periodic-based partial sensing and/or contiguous partial sensing operation. [23]  - Optionally, minimum number of slots as (*minNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the resources corresponding to aperiodic transmission. [27] | [5] [7] [9] [23] [27] |
| 1-7 | **Step 1), clarification on Y and Y’ candidate slots based on partial sensing and/or Prsvp\_TX**  In Step 1)   * The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval for UE performing periodic-based partial sensing if , correspond to one candidate single-slot resource, or in a set of *Y'* candidate slots within the time interval for UE performing at least contiguous partial sensing if *P*rsvp\_TX*=0*, correspond to one candidate single-slot resource, where … [7] * The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval if , correspond to one candidate single-slot resource, or in a set of *Y'* candidate slots within the time interval if *P*rsvp\_TX*=0*, correspond to one candidate single-slot resource, where … [9] * The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval for UE performing periodic-based partial sensing correspond to one candidate single-slot resource if *P*rsvp\_TX*≠0*, or … [14] [5] * The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval for UE performing ~~periodic-based~~ partial sensing correspond to one candidate single-slot resource for a resource (re)selection triggered by periodic transmission, or in a set of *Y'* candidate slots within the time interval for UE performing ~~contiguous~~ partial sensing ~~if~~ *~~P~~*~~rsvp\_TX~~*~~=0~~*, correspond to one candidate single-slot resource for a resource (re)selection triggered by aperiodic transmission, where … [23] * The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval if correspond to one candidate single-slot resource, or in a set of *Y'* candidate slots within the time interval if *P*rsvp\_TX*=0*, correspond to one candidate single-slot resource, where … [27] * is selected by UE where . When the UE performs at least contiguous partial sensing and if , … [7] * is selected by UE where . If , … [9] [27] | [5] [7] [9] [14] [23] [27] |
| 1-9 | **Step 2), add CPS for the case of *sl-MultiReserveResource* is enabled and , remove a redundant sentence**  In Step 2)   * From [2]:   + For the case of *sl-MultiReserveResource* is enabled and , CPS description is additionally included for *Y’* candidate slots and the parameter *sl-CPS-WindowAperiodic* is used for the M value.   + For the case of *sl-MultiReserveResource* is disabled, it is clarified that is the first slot of the selected *Y’* candidate slots. Also form [4] [7] * From [4]:   + For the case of *sl-MultiReserveResource* is enabled and , reuse existing CPS behavior from the case of *sl-MultiReserveResource* is disabled and , since the behavior is the same in RAN1’s agreement for these two cases. Similar change from [7], [9] and [23] but they both use different modification methods.   + Move the condition “if ” to the beginning of the section in the description when UE performs both PBPS and CPS, since the whole section is for the case when . Also form [7] [9]   + Remove the following redundant sentence since it is not applicable for the case when . “” Also form [7] | [2] [4] [7] [9] [23] |
| 1-15 | **Editorial corrections in Step 2)**  In Step 2)   * Whether the UE is required to performs SL reception of PSCCH and RSRP measurement for partial sensing on slots in SL DRX inactive time is enabled/disabled by higher layer parameter *sl-PartialSensingInactiveTime.* * For cases of and , the contiguous partial sensing window is defined by the range of slots . | [7] |
| 1-16 | **Editorial corrections in Step 6)**  In Step 6)   * Replace with  in two places | [7] |
| 1-17 | **Editorial corrections in re-evaluation and pre-emption checking**  In re-evaluation and pre-emption checking for periodic transmission (*Prsvp\_TX≠0*)   * By default, *M* is 31 unless (pre-)configured with another value, by *sl-CPS-WindowPeriodic*.   In re-evaluation and pre-emption checking for aperiodic transmission (*Prsvp\_TX=0*)   * For minimum size M of the contiguous partial sensing window | [2] [7] |

High priority issues for discussion

## [CLOSED] Issue #1-6: Clarification on the min number of Y and Y’ slots

**Background**:

In the higher layer parameter section (before Step 1)

- Optionally, minimum number of *Y* slots as (*sl*-*MinNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the candidate resources corresponding to periodic-based partial sensing operation for periodic transmissions. [5]

- Optionally, minimum number of *Y* slots as (*sl*-*MinNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the candidate resources corresponding to periodic-based partial sensing for resource (re)selection triggered by periodic transmission. [7]

- Optionally, minimum number of *Y* slots as (*sl*-*MinNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the candidate resources if Prsvp\_TX≠0. [9]

- Optionally, minimum number of *Y* slots as (*minNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the resources corresponding to periodictransmission. [27]

- Optionally, minimum number of slots as (*sl*-*MinNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources corresponding to contiguous partial sensing operation for aperiodic transmissions. [5]

- Optionally, minimum number of slots as (*sl*-*MinNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources corresponding to periodic-based partial sensing and/or contiguous partial sensing for resource (re)selection triggered by aperiodic transmission. [7]

- Optionally, minimum number of slots as (*sl*-*MinNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources if Prsvp\_TX=0. [9]

- Optionally, minimum number of slots as (*sl*-*MinNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources corresponding to periodic-based partial sensing and/or contiguous partial sensing operation. [23]

- Optionally, minimum number of slots as (*minNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the resources corresponding to aperiodic transmission. [27]

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| **Agreement** from RAN1#104-e**:** In a resource pool (pre-)configured with at least partial sensing, if UE performs periodic-based partial sensing, at least when the reservation for another TB (when carried in SCI) is enabled for the resource pool and resource selection/reselection is triggered at slot n, it is up to UE implementation to determine a set of Y candidate slots within a resource selection window, where   * FFS condition(s) and timing(s) for which periodic-based partial sensing is performed by UE * The resource selection window is [n+T1, n+T2]   + As a baseline, T1 and T2 are defined in the same way as in R16 NR-V2X according to step 1 [TS 38.214 Sec. 8.1.4]   + Further discuss whether or not to introduce a threshold to re-define T1 and T2 such that     - T1≥ 0 (subject to processing time constraint Tproc, 1), and T2 ≤ remaining PDB     - T2-T1 *≤* (pre-)configured threshold * A minimum value for Y is (pre-)configured from a range of values, FFS details * FFS any restriction to determine Y candidate slots (including its relationship with SL-DRX) * FFS whether the resource selection window [n+T1, n+T2] should be confined within a set of periodic set of resources and its relationship with SL-DRX * Note: The terminology “periodic-based partial sensing” is based on the “partial sensing” used in LTE-V and it is intended to be used for the design and discussion of partial sensing in Rel-17.   **Agreement** from RAN1#106-e  When UE performs periodic-based and contiguous partial sensing schemes in a mode 2 Tx pool with periodic reservation for another TB (sl-MultiReserveResource) enabled,   * For a resource (re)selection procedure triggered by periodic transmission (Prsvp\_TX≠0) in slot n   + A set of candidate resource (SA) is initialized to the set of selected Y candidate slots of PBPS     - UE performs contiguous partial sensing in [n+TA, n+TB] for resource exclusion from the initialized candidate resource set (SA)       * FFS details of TA and TB based on the agreement(s) from previous RAN1 meetings * Note, re-evaluation and pre-emption checking based on periodic-based and contiguous partial sensing schemes is considered separately   FFS: The condition under which UE performs periodic-based and contiguous partial sensing schemes in a mode 2 Tx pool with periodic reservation for another TB (sl-MultiReserveResource) enabled  **Agreement** from RAN1#107-e  When UE performs at least contiguous partial sensing in a mode 2 Tx pool for a resource (re)selection procedure triggered by aperiodic transmission (*P*rsvp\_TX*=0*) in slot *n*,   * The UE selects a set of *Y’* candidate slots with corresponding PBPS and/or CPS results (if available) within the RSW.   + If the total number of *Y’* candidate slots is less than a (pre-)configured threshold *Y’min*,     - How UE includes other candidate slots is up to UE implementation * Candidate resource set (*SA*) is initialized to the set of all single-slot candidate resources in the selected *Y’* candidate slots. * For the CPS monitoring window [*n*+*T*A, *n*+*T*B]:   + *TA* and *TB* are both selected such that UE has sensing results starting at *M* consecutive logical slots before *ty0* and ending at *Tproc,0* + *Tproc,1* slots earlier than *ty0*.     - FFS: By default, *M* is 31 unless (pre-)configured with another value, ~~or~~ where *M* is (pre-)configured based on transmission priority     - FFS: The range of (pre-)configured *M* from a TBD lowest value up to 30     - When the minimum *M* slots for CPS cannot be guaranteed, support both       * Option A, the UE ensures the *Y’min* criterion is fulfilled       * Option B: UE performs random resource selection       * When the UE performs Option A or Option B is up to UE implementation |

**FL assessment/comments/recommendation:**

* When *Y* and slots were first discussed during the WI, these were agreed for periodic-based partial sensing and for periodic transmissions. Therefore, I can see that all of the above TPs are correct.
* On the other hand, and slots were introduced for aperiodic transmissions. The selection of Y’ candidate slots may correspond to PBPS and/or CPS results if available within the selection window.
* Therefore, FL recommends the following changes in Section 2.2.1.

### FL Proposal for Round 1

**Text Proposal 1-6 (I):**

**------------------------------------------------ Start of Text Proposal for TS 38.214 ------------------------------------------------**

**8.1.4 UE procedure for determining the subset of resources to be reported to higher layers in PSSCH resource selection in sidelink resource allocation mode 2**

**<Unchanged parts omitted>**

- Optionally, minimum number of *Y* slots as (*sl*-*MinNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the candidate resources corresponding to periodic-based partial sensing for resource (re)selection triggered by periodic transmission ().

- Optionally, minimum number of slots as (*sl*-*MinNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources corresponding to periodic-based partial sensing and/or contiguous partial sensing results (if available) for resource (re)selection triggered by aperiodic transmission ().

**--------------------------------------------------------End of Text Proposal ------------------------------------------------------------**

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| **Company** | **Comments** |
| Sharp | We wonder whether PBPS and CPS are necessary in these 2 paragraphs, as they are almost the same as the change in Issue 1-7. In our views, we could simply change as:  - Optionally, minimum number of *Y* slots as (*sl*-*MinNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the candidate resources corresponding to ~~periodic-based partial sensing for resource (re)selection triggered by~~ periodic transmission ().  - Optionally, minimum number of slots as (sl-MinNumCandidateSlotsAperiodic), which indicates the minimum number of slots that are included in the candidate resources corresponding to ~~periodic-based partial sensing and/or contiguous partial sensing results (if available) for resource (re)selection triggered by~~ aperiodic transmission ().  FL response: When implementing the TP for issues #1-6 and #1-7, the intention is to match their descriptions closely. That is, if the wordings for PBPS and CPS are used in one place, it is better to mention PBPS and CPS in other places too for Y and Y’ slots in Step 1) to be consistent. Given that there is a concern from CATT/GH on the proposed deletion and others seem OK with the original proposal, my suggestion is to keep the original one. |
| Qualcomm | We are ok with the proposal |
| vivo | We are ok with the proposal |
| DCM | OK |
| CATT/GH | We support the proposal.  For Sharp’s change, deleting partial sensing related description may lead to some misunderstanding for the usage of *Ymin* or *Y’min*. Align the description of *Ymin* and *Y’min* with the corresponding RRC parameter as the TP seems more reasonable. |
| ZTE, Sanechips | We are ok with the proposal. |
| Lenovo | We are supportive of the proposal. |
| Xiaomi | We support the proposal |
| OPPO | Support |

### Outcome of Week 1 Wednesday GTW session

**Agreement**

Adopt the following TP for TS 38.214

**------------------------------------------------ Start of Text Proposal for TS 38.214 ------------------------------------------------**

**8.1.4 UE procedure for determining the subset of resources to be reported to higher layers in PSSCH resource selection in sidelink resource allocation mode 2**

**<Unchanged parts omitted>**

- Optionally, minimum number of *Y* slots as (*sl*-*MinNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the candidate resources corresponding to periodic-based partial sensing and contiguous partial sensingfor resource (re)selection triggered by periodic transmission ().

- Optionally, minimum number of slots as (*sl*-*MinNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources corresponding to periodic-based partial sensing and/or contiguous partial sensing results (if available) for resource (re)selection triggered by aperiodic transmission ().

**--------------------------------------------------------End of Text Proposal ------------------------------------------------------------**

## [CLOSED] Issue #1-7: Step 1), clarification on Y and Y’ candidate slots based on partial sensing and/or Prsvp\_TX

**Background**:

In Step 1)

* The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval for UE performing periodic-based partial sensing if , correspond to one candidate single-slot resource, or in a set of *Y'* candidate slots within the time interval for UE performing at least contiguous partial sensing if *P*rsvp\_TX*=0*, correspond to one candidate single-slot resource, where … [7]
* The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval if , correspond to one candidate single-slot resource, or in a set of *Y'* candidate slots within the time interval if *P*rsvp\_TX*=0*, correspond to one candidate single-slot resource, where … [9]
* The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval for UE performing periodic-based partial sensing correspond to one candidate single-slot resource if *P*rsvp\_TX*≠0*, or … [14] [5]
* The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval for UE performing ~~periodic-based~~ partial sensing correspond to one candidate single-slot resource for a resource (re)selection triggered by periodic transmission, or in a set of *Y'* candidate slots within the time interval for UE performing ~~contiguous~~ partial sensing ~~if~~ *~~P~~*~~rsvp\_TX~~*~~=0~~*, correspond to one candidate single-slot resource for a resource (re)selection triggered by aperiodic transmission, where … [23]
* The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval if correspond to one candidate single-slot resource, or in a set of *Y'* candidate slots within the time interval if *P*rsvp\_TX*=0*, correspond to one candidate single-slot resource, where … [27]
* is selected by UE where . When the UE performs at least contiguous partial sensing and if , … [7]
* is selected by UE where . If , … [9] [27]

**FL assessment/comments/recommendations:**

* According to the past agreements cited in Section 2.2.1 for Issue #1-6 (not copied here again to save space) and taking into account of all the proposed TPs in this meeting, the following TP 1-7 (I) in Section 2.3.1 is recommended from the FL. This is intended to align with the recommended TP 1-6 (I) in the previous Issue #1-6.

### FL Proposal for Round 1

**Text Proposal 1-7 (I):**

**------------------------------------------------ Start of Text Proposal for TS 38.214 ------------------------------------------------**

**8.1.4 UE procedure for determining the subset of resources to be reported to higher layers in PSSCH resource selection in sidelink resource allocation mode 2**

**<Unchanged parts omitted>**

1) A candidate single-slot resource for transmission is defined as a set of contiguous sub-channels with sub-channel *x+j* in slot where . The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval correspond to one candidate single-slot resource for UE performing periodic-based partial sensing and resource (re)selection triggered by periodic transmission (), or in a set of *Y'* candidate slots within the time interval correspond to one candidate single-slot resource for UE performing at least contiguous partial sensing and resource (re)selection triggered by aperiodic transmission (), where

- selection of is up to UE implementation under , where is defined in slots in Table 8.1.4-2 where is the SCS configuration of the SL BWP;

- if is shorter than the remaining packet delay budget (in slots) then is up to UE implementation subject to remaining packet delay budget (in slots); otherwise is set to the remaining packet delay budget (in slots).

- is selected by UE where .

- is selected by UE where . When the UE performs at least contiguous partial sensing and if , the UE selects a set of candidate slots with corresponding PBPS and/or CPS results (if available). If the number of candidate single-slot resources is smaller than , it is up to UE implementation to include other candidate slots.

The total number of candidate single-slot resources is denoted by .

**--------------------------------------------------------End of Text Proposal ------------------------------------------------------------**

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| **Company** | **Comments** |
| Sharp | We are fine with the changes. |
| Qualcomm | We are ok with the proposal |
| vivo | We are ok with the proposal |
| DCM | We propose a bit update. Y slots are included in the candidate resources corresponding to PBPS, this is the text in issue 1-6. But this does not mean Y slots are for UE performing PBPS. Both CPS/PBPS are performed for the Y slots, and how to decide Y slots are based on PBPS. Then now the current update ‘for UE performing periodic-based partial sensing’ is misleading like only PBPS is performed. To avoid this, we suggest the following update.  in a set of *Y* candidate slots within the time interval correspond to one candidate single-slot resource corresponding to periodic-based partial sensing and for UE performing resource (re)selection triggered by periodic transmission (),  FL response: According to the PBPS agreement made in RAN1#104-e (cited above) and in my understanding, if the Y slots are selected and correspond to PBPS, then it means the UE performs PBPS. For the suggested modification, it does not change the meaning technically but now the sentence reads a bit strange. Since other companies are OK with the original proposal and no supports for this modified version, the original version seems stable to the majority. |
| CATT/GH | We support the proposal. |
| ZTE, Sanechips | We are ok with the proposal. |
| Lenovo | OK. |
| Xiaomi | OK |
| OPPO | Support |

### Outcome of Week 1 Wednesday GTW session

**Agreement**

Adopt the TP below for TS38.214

**------------------------------------------------ Start of Text Proposal for TS 38.214 ------------------------------------------------**

**8.1.4 UE procedure for determining the subset of resources to be reported to higher layers in PSSCH resource selection in sidelink resource allocation mode 2**

**<Unchanged parts omitted>**

1) A candidate single-slot resource for transmission is defined as a set of contiguous sub-channels with sub-channel *x+j* in slot where . The UE shall assume that any set of contiguous sub-channels included in the corresponding resource pool within the time interval correspond to one candidate single-slot resource for UE performing full sensing, in a set of *Y* candidate slots within the time interval correspond to one candidate single-slot resource for UE performing periodic-based partial sensing together with contiguous partial sensing and resource (re)selection triggered by periodic transmission (), or in a set of *Y'* candidate slots within the time interval correspond to one candidate single-slot resource for UE performing at least contiguous partial sensing and resource (re)selection triggered by aperiodic transmission (), where

- selection of is up to UE implementation under , where is defined in slots in Table 8.1.4-2 where is the SCS configuration of the SL BWP;

- if is shorter than the remaining packet delay budget (in slots) then is up to UE implementation subject to remaining packet delay budget (in slots); otherwise is set to the remaining packet delay budget (in slots).

- is selected by UE where .

- is selected by UE where . When the UE performs at least contiguous partial sensing and if , the UE selects a set of candidate slots with corresponding PBPS and/or CPS results (if available). If the number of candidate single-slot resources is smaller than , it is up to UE implementation to include other candidate slots.

The total number of candidate single-slot resources is denoted by .

**--------------------------------------------------------End of Text Proposal ------------------------------------------------------------**

## [ACTIVE] Issue #1-9: Step 2), add CPS for the case of sl-MultiReserveResource is enabled and , remove a redundant sentence

**Background**:

In Step 2)

* From [2]:
  + For the case of *sl-MultiReserveResource* is enabled and , CPS description is additionally included for *Y’* candidate slots and the parameter *sl-CPS-WindowAperiodic* is used for the M value.
  + For the case of *sl-MultiReserveResource* is disabled, it is clarified that is the first slot of the selected *Y’* candidate slots. Also form [4] [7]
* From [4]:
  + For the case of *sl-MultiReserveResource* is enabled and , reuse existing CPS behavior from the case of *sl-MultiReserveResource* is disabled and , since the behavior is the same in RAN1’s agreement for these two cases. Similar change from [7], [9] and [23] but they both use different modification methods.
  + Move the condition “if ” to the beginning of the section in the description when UE performs both PBPS and CPS, since the whole section is for the case when . Also form [7] [9]
  + Remove the following redundant sentence since it is not applicable for the case when . “” Also form [7]

**FL assessment/comments/recommendation:**

* Observing from all the proposed TPs for the missing case “when *sl-MultiReserveResource* is enabled and ”, instead of introducing an additional description in the spec as proposed in [2], it is simpler to adopt the approach proposed in [4] [7] [9] of making use of the existing description for the case “when *sl-MultiReserveResource* is disabled and ”. At the same time, I have also tried to make the change even simpler in the recommended TP 1-9 (I) in Section 2.4.1.
* For the case of , simply followed the majority proposal and removed the redundant sentence at the end of the paragraph.

### FL Proposal for Round 1

**Text Proposal 1-9 (I):**

**------------------------------------------------ Start of Text Proposal for TS 38.214 ------------------------------------------------**

**8.1.4 UE procedure for determining the subset of resources to be reported to higher layers in PSSCH resource selection in sidelink resource allocation mode 2**

**<Unchanged parts omitted>**

When the UE performs periodic-based partial sensing and contiguous partial sensing with periodic reservation for another TB (*sl-MultiReserveResource*) enabled and , the sensing window is defined by the range of slots . *n*+*T*A is *M* consecutive logical slots earlier than slot , and *n*+*T*B is slots earlier than , where is the first slot of the selected *Y* candidate slots of PBPS, and , are in units of physical time/slots. The value of *M* is (pre-)configured with the *sl-CPS-WindowPeriodic*. If *sl-CPS-WindowPeriodic* is not (pre-)configured, *M* equals to 31.

When the UE performs at least contiguous partial sensing with periodic reservation for another TB (*sl-MultiReserveResource*) either disabled or enabled and if , the sensing window is defined by the range of slots . and are both selected such that the UE has sensing results starting at least *M* consecutive logical slots before and ending at slots earlier than , where is the first slot of the selected candidate slots. The value of *M* is (pre-)configured with the *sl-CPS-WindowAperiodic*. If *sl-CPS-WindowAperiodic* is not (pre-)configured, *M* equals to 31. When the minimum *M* slots for CPS cannot be guaranteed and when , it is up to UE implementation to either continue with step 3) or perform random selection.

**--------------------------------------------------------End of Text Proposal ------------------------------------------------------------**

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| **Company** | **Comments** |
| Sharp | We are fine with the proposed changes. |
| Qualcomm | We are largely ok with the proposal but propose the following modification for brevity:  When the UE performs at least contiguous partial sensing ~~with periodic reservation for another TB (~~*~~sl-MultiReserveResource~~*~~) either disabled or enabled~~ and if , the sensing window |
| vivo | We are ok with the proposal |
| DCM | OK |
| CATT/GH | We are generally fine with the proposal.  For the second paragraph of the TP, we support the more concise modification proposed by Qualcomm. |
| ZTE, Sanechips | We are ok with the proposal, also agree with Qualcomm’s update. |
| Lenovo | OK. |
| Xiaomi | OK. We are also fine with QC version |
| OPPO | Support |

### Text Proposal for Week 1 Wednesday GTW session and continuing discussion in Round 1

**Text Proposal 1-9 (II):**

**------------------------------------------------ Start of Text Proposal for TS 38.214 ------------------------------------------------**

**8.1.4 UE procedure for determining the subset of resources to be reported to higher layers in PSSCH resource selection in sidelink resource allocation mode 2**

**<Unchanged parts omitted>**

When the UE performs periodic-based partial sensing and contiguous partial sensing with periodic reservation for another TB (*sl-MultiReserveResource*) enabled and , the sensing window is defined by the range of slots . *n*+*T*A is *M* consecutive logical slots earlier than slot , and *n*+*T*B is slots earlier than , where is the first slot of the selected *Y* candidate slots of PBPS, and , are in units of physical time/slots. The value of *M* is (pre-)configured with the *sl-CPS-WindowPeriodic*. If *sl-CPS-WindowPeriodic* is not (pre-)configured, *M* equals to 31.

When the UE performs at least contiguous partial sensing and if , the sensing window is defined by the range of slots . and are both selected such that the UE has sensing results starting at least *M* consecutive logical slots before and ending at slots earlier than , where is the first slot of the selected candidate slots. The value of *M* is (pre-)configured with the *sl-CPS-WindowAperiodic*. If *sl-CPS-WindowAperiodic* is not (pre-)configured, *M* equals to 31. When the minimum *M* slots for CPS cannot be guaranteed and when , it is up to UE implementation to either continue with step 3) or perform random selection.

**--------------------------------------------------------End of Text Proposal ------------------------------------------------------------**

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| --- | --- |
| **Company** | **Comments** |
| Samsung | Text proposal is OK, however, suggest the following change in the second paragraph, delete as it is already mentioned in the second line of the paragraph:  When the UE performs at least contiguous partial sensing and if , the sensing window is defined by the range of slots . and are both selected such that the UE has sensing results starting at least *M* consecutive logical slots before and ending at slots earlier than , where is the first slot of the selected candidate slots. The value of *M* is (pre-)configured with the *sl-CPS-WindowAperiodic*. If *sl-CPS-WindowAperiodic* is not (pre-)configured, *M* equals to 31. When the minimum *M* slots for CPS cannot be guaranteed ~~and when~~ , it is up to UE implementation to either continue with step 3) or perform random selection. |
| Intel | We are generally OK with the proposal. However, it is unclear why the “at least” at the start of the second paragraph is necessary. |
| Huawei, HiSilicon | Fine with the changes. |
| Sharp | We are fine except for the added “where is the first slot of the selected candidate slots”.  For aperiodic transmission, there can be cases when the candidate slots include other slots besides the Y’ slots, see the specs below,  - is selected by UE where . When the UE performs contiguous partial sensing and if , the UE selects a set of candidate slots with corresponding PBPS and/or CPS results (if available). If the number of candidate single-slot resources is smaller than , it is up to UE implementation to include other candidate slots.  Therefore, we propose to simply add “ where is the first slot of the selected candidate slots”. |
| DCM | OK |
| Lenovo | Support |

Editorial issues for discussion

## [ACTIVE] Issue #1-15, #1-16, #1-17: Editorial corrections in Step 2), Step 6) and re-evaluation and pre-emption checking

### Text Proposal for Round 1

**FL comment:**

* While implementing the editorial TP below, I have also identified other editorial/format issues in the same sections that could be fixed at the same time to align with other parts of the spec. It is proposed to make these changes now to save discussion in the future.

**Text Proposal 1-15/16/17 (I):**

**------------------------------------------------ Start of Text Proposal for TS 38.214 ------------------------------------------------**

**8.1.4 UE procedure for determining the subset of resources to be reported to higher layers in PSSCH resource selection in sidelink resource allocation mode 2**

**<Unchanged parts omitted>**

When the UE performs periodic-based partial sensing and contiguous partial sensing with periodic reservation for another TB (*sl-MultiReserveResource*) enabled, the contiguous partial sensing window is defined by the range of slots . *n*+*T*A is *M* consecutive logical slots earlier than slot , and *n*+*T*B is slots earlier than , where is the first slot of the selected *Y* candidate slots of PBPS, and , are in units of physical time/slots. If the value of *M* is (pre-)configured with the *sl-CPS-WindowPeriodic*. If *sl-CPS-WindowPeriodic* is not (pre-)configured, *M* equals to 31. When the minimum *M* slots for CPS cannot be guaranteed and when , it is up to UE implementation to either continue with step 3) or perform random selection.

When the UE performs contiguous partial sensing with periodic reservation for another TB (*sl-MultiReserveResource*) disabled and if , the contiguous partial sensing window is defined by the range of slots . and are both selected such that the UE has sensing results starting at least *M* consecutive logical slots before and ending at slots earlier than . The value of *M* is (pre-)configured with the *sl-CPS-WindowAperiodic*. If *sl-CPS-WindowAperiodic* is not (pre-)configured, *M* equals to 31. When the minimum *M* slots for CPS cannot be guaranteed and when , it is up to UE implementation to either continue with step 3) or perform random selection.

Whether the UE is required to performs SL reception of PSCCH and RSRP measurement for partial sensing on slots in SL DRX inactive time is enabled/disabled by higher layer parameter *sl-PartialSensingInactiveTime.* When it is enabled, if UE performs periodic-based partial sensing on the slots in SL DRX inactive time for a given periodicity corresponding to , UE monitors only the default periodic sensing occasions (most recent sensing occasion) from the slots; if UE performs contiguous partial sensing on the slots in SL DRX inactive time, UE monitors a minimum of *M* slots from the slots.

**<Unchanged parts omitted>**

c) the SCI format received in slot or the same SCI format which, if and only if the '*Resource reservation period*' field is present in the received SCI format 1-A, is assumed to be received in slot(s) determines according to clause 8.1.5 the set of resource blocks and slots which overlaps with for *q*=1, 2, …, *Q* and *j=*0, 1, …, . Here, is converted to units of logical slots according to clause 8.1.7, if and , where if the UE is configured with full sensing by its higher layer, if slot *n* belongs to the set , otherwise slot is the first slot after slot *n* belonging to the set ; If UE is configured with partial sensing by its higher layer, if slot belongs to the set , otherwise, slot is the first slot after slot belonging to the set . Otherwise . If the UE is configured with full sensing by its higher layer, is set to selection window size *T2* converted to units of msec. If UE is configured with partial sensing by its higher layer, shall be converted to milliseconds, where slot is the last slot of the or candidate slots. The slot is the first slot of the selected/remaining set of or candidate slots.

**<Unchanged parts omitted>**

When the UE performs periodic-based partial sensing and contiguous partial sensing, and when the UE is triggered to perform re-evaluation and pre-emption checking, and if ,

- During the *q*th reservation period (*q*=0,1,2,…, *Cresel*-1), candidate resource set (*SA*) is initialized to the remaining *Y* candidate slots starting from slot and ending at the last slot of the *Y* candidate slots, where the slot indices of the remaining *Y* candidate slots are equal to , where is a slot index of *Y* candidate slots used in the initial resource (re)selection.

- is the first candidate slot after slot *n+T3*.

- The UE performs PBPS for the remaining *Y* candidate slots according to , whereis a slot belonging to the remaining *Y* candidate slots, and *k* and *Preserve* are the same as resource (re)selection, where the values of *k* correspond to the most recent sensing occasion earlier than if *sl-Additional-PBPS-Occasion* is not (pre-)configured, and additionally includes the value of *k* corresponding to the last periodic sensing occasion prior to the most recent one if *sl-Additional-PBPS-Occasion* is (pre-)configured.

- The UE performs CPS starting from *M* logical slots earlier than to slots earlier than .

- By default, *M* is 31 unless (pre-)configured with another value by *sl-CPS-WindowPeriodic*.

When the UE is triggered to perform re-evaluation and pre-emption checking, and if ,

- Candidate resource set (*SA*) is initialized to the remaining *Y'* candidate slots starting from slot and ending at the last slot of the *Y'* candidate slots, where is the first candidate slot after slot *n+T3*.

- It is up to UE implementation that UE may perform PBPS for periodic sensing occasions after the resource (re)selection when higher layer parameter *sl-MultiReserveResource* is enabled

- UE performs CPS starting from at least *M* consecutive logical slots earlier than to slots earlier than

- For minimum size *M* of the contiguous partial sensing window, by default, *M* is 31 unless (pre-)configured with another value, by *sl-CPS-WindowAperiodic*.

When the minimum *M* slots for CPS cannot be guaranteed, UE senses in all available slots starting from the resource (re)selection trigger slot of the same TB to slots earlier than . The UE re-evaluation and pre-emption checking is based on all available sensing results after .

**--------------------------------------------------------End of Text Proposal ------------------------------------------------------------**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Sharp | Regarding the first two changes with the addition of “contiguous partial”, we don’t think it is essential. In this case, UE is configured by higher layer to perform partial sensing, not full sensing, so there is no ambiguity. If majority companies support the change, we are fine.  For pre-emption/re-evaluation, it seems FL made a typo for the editorial changes. The first should be for and the latter is for . |
| Qualcomm | We have the same comment as Sharp about and . |
| vivo | Regarding the addition of “contiguous partial”, we think it is needed for clarity. We have the same comment as Sharp about and . |
| DCM | Same view with QC. We are fine with adding ‘contiguous partial’. |
| CATT/GH | We also think the addition of “contiguous partial” in the first two paragraphs is essential for clarification and also for alignment with the re-evaluation and pre-emption part.  We share the same view with other companies that the typo for and should be modified. |
| ZTE, Sanechips | Same comments about and . |
| Lenovo | We hold the same view with Sharp regarding and . |
| OPPO | Same comments about and . |

### Text Proposal for Week 1 Wednesday GTW session and continuing discussion in Round 1

**Text Proposal 1-15/16/17 (II):**

**------------------------------------------------ Start of Text Proposal for TS 38.214 ------------------------------------------------**

**8.1.4 UE procedure for determining the subset of resources to be reported to higher layers in PSSCH resource selection in sidelink resource allocation mode 2**

**<Unchanged parts omitted>**

When the UE performs periodic-based partial sensing and contiguous partial sensing with periodic reservation for another TB (*sl-MultiReserveResource*) enabled, the contiguous partial sensing window is defined by the range of slots . *n*+*T*A is *M* consecutive logical slots earlier than slot , and *n*+*T*B is slots earlier than , where is the first slot of the selected *Y* candidate slots of PBPS, and , are in units of physical time/slots. If the value of *M* is (pre-)configured with the *sl-CPS-WindowPeriodic*. If *sl-CPS-WindowPeriodic* is not (pre-)configured, *M* equals to 31. When the minimum *M* slots for CPS cannot be guaranteed and when , it is up to UE implementation to either continue with step 3) or perform random selection.

When the UE performs contiguous partial sensing with periodic reservation for another TB (*sl-MultiReserveResource*) disabled and if , the contiguous partial sensing window is defined by the range of slots . and are both selected such that the UE has sensing results starting at least *M* consecutive logical slots before and ending at slots earlier than . The value of *M* is (pre-)configured with the *sl-CPS-WindowAperiodic*. If *sl-CPS-WindowAperiodic* is not (pre-)configured, *M* equals to 31. When the minimum *M* slots for CPS cannot be guaranteed and when , it is up to UE implementation to either continue with step 3) or perform random selection.

Whether the UE is required to performs SL reception of PSCCH and RSRP measurement for partial sensing on slots in SL DRX inactive time is enabled/disabled by higher layer parameter *sl-PartialSensingInactiveTime.* When it is enabled, if UE performs periodic-based partial sensing on the slots in SL DRX inactive time for a given periodicity corresponding to , UE monitors only the default periodic sensing occasions (most recent sensing occasion) from the slots; if UE performs contiguous partial sensing on the slots in SL DRX inactive time, UE monitors a minimum of *M* slots from the slots.

**<Unchanged parts omitted>**

c) the SCI format received in slot or the same SCI format which, if and only if the '*Resource reservation period*' field is present in the received SCI format 1-A, is assumed to be received in slot(s) determines according to clause 8.1.5 the set of resource blocks and slots which overlaps with for *q*=1, 2, …, *Q* and *j=*0, 1, …, . Here, is converted to units of logical slots according to clause 8.1.7, if and , where if the UE is configured with full sensing by its higher layer, if slot *n* belongs to the set , otherwise slot is the first slot after slot *n* belonging to the set ; If UE is configured with partial sensing by its higher layer, if slot belongs to the set , otherwise, slot is the first slot after slot belonging to the set . Otherwise . If the UE is configured with full sensing by its higher layer, is set to selection window size *T2* converted to units of msec. If UE is configured with partial sensing by its higher layer, shall be converted to milliseconds, where slot is the last slot of the or candidate slots. The slot is the first slot of the selected/remaining set of or candidate slots.

**<Unchanged parts omitted>**

When the UE performs periodic-based partial sensing and contiguous partial sensing, and when the UE is triggered to perform re-evaluation and pre-emption checking, and if ,

- During the *q*th reservation period (*q*=0,1,2,…, *Cresel*-1), candidate resource set (*SA*) is initialized to the remaining *Y* candidate slots starting from slot and ending at the last slot of the *Y* candidate slots, where the slot indices of the remaining *Y* candidate slots are equal to , where is a slot index of *Y* candidate slots used in the initial resource (re)selection.

- is the first candidate slot after slot *n+T3*.

- The UE performs PBPS for the remaining *Y* candidate slots according to , whereis a slot belonging to the remaining *Y* candidate slots, and *k* and *Preserve* are the same as resource (re)selection, where the values of *k* correspond to the most recent sensing occasion earlier than if *sl-Additional-PBPS-Occasion* is not (pre-)configured, and additionally includes the value of *k* corresponding to the last periodic sensing occasion prior to the most recent one if *sl-Additional-PBPS-Occasion* is (pre-)configured.

- The UE performs CPS starting from *M* logical slots earlier than to slots earlier than .

- By default, *M* is 31 unless (pre-)configured with another value by *sl-CPS-WindowPeriodic*.

When the UE is triggered to perform re-evaluation and pre-emption checking, and if ,

- Candidate resource set (*SA*) is initialized to the remaining *Y'* candidate slots starting from slot and ending at the last slot of the *Y'* candidate slots, where is the first candidate slot after slot *n+T3*.

- It is up to UE implementation that UE may perform PBPS for periodic sensing occasions after the resource (re)selection when higher layer parameter *sl-MultiReserveResource* is enabled

- UE performs CPS starting from at least *M* consecutive logical slots earlier than to slots earlier than

- For minimum size *M* of the contiguous partial sensing window, by default, *M* is 31 unless (pre-)configured with another value, by *sl-CPS-WindowAperiodic*.

When the minimum *M* slots for CPS cannot be guaranteed, UE senses in all available slots starting from the resource (re)selection trigger slot of the same TB to slots earlier than . The UE re-evaluation and pre-emption checking is based on all available sensing results after .

**--------------------------------------------------------End of Text Proposal ------------------------------------------------------------**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Samsung | Support |
| Intel | We are OK with the text proposed. |
| Huawei, HiSilicon | Ok with the changes |
| Sharp | We are fine with the TP. |
| DCM | OK |
| Lenovo | Support |

References

1. [R1-2208386](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2208386.zip) Discussion on resolving ambiguous text in 38.214 FUTUREWEI
2. [R1-2208610](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2208610.zip) Corrections for partial sensing resource selection vivo
3. [R1-2208816](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2208816.zip) Draft CR on Q formula in step 6c for periodic-based partial sensing OPPO
4. [R1-2208817](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2208817.zip) Draft CR on CPS sensing window OPPO
5. [R1-2208818](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2208818.zip) Draft CR on the description of candidate slots for partial sensing OPPO
6. [R1-2208819](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2208819.zip) Draft CR on starting slot and pre-condition in re-evaluation and pre-emption checking for partial sensing OPPO
7. [R1-2208919](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2208919.zip) Correction on the operations of partial sensing CATT, GOHIGH
8. [R1-2208922](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2208922.zip) Discussion on remaining issues for R17 eSL power saving RA maintenance CATT, GOHIGH
9. [R1-2209309](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209309.zip) Corrections on the selection of Y or Y’ candidate slots for partial sensing CMCC
10. [R1-2209562](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209562.zip) Correction on Q formula for the second most recent periodic sensing occasion Apple
11. [R1-2209563](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209563.zip) Correction on CPS monitoring length during sidelink DRX inactive time Apple
12. [R1-2209676](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209676.zip) Clarification on pre-emption and re-evaluation for periodic transmission in partial sensing Sharp
13. [R1-2209677](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209677.zip) Clarification on monitoring slots for pre-emption check due to half-duplex constraint in partial sensing Sharp
14. [R1-2209678](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209678.zip) Correction on candidate slots selection for partial sensing Sharp
15. [R1-2209680](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209680.zip) Clarification on Preserve for periodic based partial sensing Sharp
16. [R1-2209681](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209681.zip) Clarification on candidate slots for aperiodic transmission in partial sensing Sharp
17. [R1-2209683](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209683.zip) Remaining issues on NR sidelink enhancement Sharp
18. [R1-2209827](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209827.zip) Correction on Q formula in step 6 of sensing and resource exclusion procedure in TS 38.214 Huawei, HiSilicon
19. [R1-2209828](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209828.zip) Correction on description of random resource selection in TS 38.214 Huawei, HiSilicon
20. [R1-2209874](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209874.zip) Draft CR on half-duplex consideration for SL re-evaluation/pre-emption check NTT DOCOMO, INC.
21. [R1-2209875](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209875.zip) Draft CR on insufficient candidate resources for SL re-evaluation/pre-emption check NTT DOCOMO, INC.
22. [R1-2209876](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209876.zip) Draft CR on slot n+T3 excluded from SL re-evaluation/pre-emption check NTT DOCOMO, INC.
23. [R1-2209877](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2209877.zip) Draft CR on Y/Y’ candidate slots for SL partial sensing NTT DOCOMO, INC.
24. [R1-2210125](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2210125.zip) [Draft] Consideration of associated processing times for contiguous partial sensing Ericsson
25. [R1-2210126](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2210126.zip) [Draft] Correction to allowed resource selection mechanisms in a resource pool in mode 2 Ericsson
26. [R1-2210127](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2210127.zip) [Draft] Correction to contiguous partial sensing window Ericsson
27. [R1-2210154](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2210154.zip) Draft CR on corrections for the description of candidate slots in TS38.214 Lenovo
28. [R1-2210333](file:///C:\3GPP\RAN1_Meetings\Tdocs\2022\R1-2210333.zip) Moderator summary for AI 8.11: Maintenance on NR sidelink enhancement Moderator (LG Electronics)