**3GPP TSG RAN WG1 Meeting #110 R1-2207785**

**Toulouse, France, August 22nd – 26th, 2022**

**Agenda item:** 8.11

**Source:** Moderator (OPPO)

**Title:** FL summary #1 for AI 8.11: R17 eSL power saving RA maintenance

**Document for:** Discussion and decision

## Introduction

Maintenance issues submitted in contributions [1-16] to RAN1#110 meeting are summarized Sections 2 for R17 eSL power saving. An initial assessment on each of the maintenance issues is provided based on the following classification:

* ***High priority (H)****:*
  + *High-priority item (essential, pending issues, broken spec components) and proposed editorial changes that either enhance the clarity of the specs or correct mistakes*
* ***Non-essential (N)****:*
  + *All other purposes such as spec optimization and low priority issues*
* ***Editorial (E)****:*
  + *Editorial issues that will be handled as editorial CRs (to be communicated to the editors/chairs)*

## Preparation for maintenance

## Collection of issues for agenda item “Resource allocation for power saving”

**Table 1 - Resource allocation for power saving**

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| **Issue#** | **Issue** | **References** | **FL initial assessment** |
| 1 | Update of Q formula in Step 6 for the 2nd most recent PSO   * Per the latest FL Proposal 1-1 (V) from RAN1#109-e [1, 2, 3, 8] * No change to the current spec [5] * Per the original Option 2 with 4 cases from RAN1#108-e [11] | [1] (2.1.1)  [2] (5)  [3] (2.6)  [5] (2.1)  [8] (2.1)  [11] (2.1.2) | H |
| 2 | UE reports a full initialized candidate resource set (*SA*) when performing random resource selection (only Step 1-4) | [1] (2.1.2) | N |
| 3 | Random resource selection in a resource pool configured with mixed RA types | [1] (2.1.3) | N |
| 4 | When *partialSensingInactiveTime* is enabled, UE monitors only the default periodic sensing occasions (most recent sensing occasion earlier than ) from the slots; | [2] (6.2) | N |
| 5 | Conditions in which the UE performs CPS   * … the UE performs contiguous partial sensing, unless other conditions state otherwise in the specification. [3, 8, 10, 12] * No change to the current spec description in 38.214 [4] | [3] (2.1)  [4] (2.1)  [8] (P4)  [10] (P1, p2)  [12] (TP#1) | H |
| 6 | Selection of Y or Y’ candidate slots should be based on periodic or aperiodic Tx | [3] (2.2)  [4] (2.3)  [8] (P2, P3)  [12] (TP#1) | H |
| 7 | Confirming or reverting the WA on the lower bound of *M* value for CPS window in aperiodic traffic | [3] (2.3)  [4] (2.2) | N |
| 8 | Definition of slot in re-evaluation and pre-emption checking should be corrected as “ is the first candidate slot from slot *n+T3*.” | [3] (2.4)  [12] (TP#3) | H |
| 9 | Pre-conditions for re-evaluation and pre-emption checking | [3] (2.5) | N |
| 10 | Corrections on CPS sensing window:   * To clearly distinguish UE behavior for CPS in the two cases of and * Use to indicate the first slot of the selected *Y’* candidate slots * Remove the sentence “~~When the minimum M slots for CPS cannot be guaranteed and when P\_"rsvp\_TX" =0, it is up to UE implementation to either continue with step 3) or perform random selection~~” in case of periodic transmission | [3] (2.7)  [4] (2.3)  [6] (TP#1, #2)  [8] (P5)[12] (TP#1) | H |
| 11 | **Proposal 2**: Within inactive time period of Rx UE, Rx UE can only detect the SCI on reserved resource for potential (re-)transmission.  **Proposal 3**: Support SL Tx/Rx performed in a power saving manner by configuring a resource pool partition for resource alignment among multiple UEs.   * A resource pool partition is configured by a set of disjoint resource patterns. * Each resource pattern can be configured with features about controlling selection opportunities for different type of services and thus facilitating resource avoidance. * For a resource pool selected for use, a UE can further (re-)select resource pattern(s) based on sensing results. * Resource alignment can be performed by indicating identity of resource pattern among UEs. | [5] (2.2) | N |
| 12 | Use *M’* instead of *M* for the minimum CPS window when | [6] (TP#1) | N |
| 13 | Use *k’* to indicate the instance of periodic sensing occasions in PBPS, where *k*’=1 if *sl-Additional-PBPS-Occasion* is not (pre-)configured and *k*’=2 if *sl-Additional-PBPS-Occasion* is (pre-)configured | [6] (TP#3) | N |
| 14 | Whether full sensing UE can be configured with SL DRX   * A UE configured with SL DRX for power saving for its own reception is not expected to use full sensing [6] * A full sensing UE performs PSCCH reception and RSRP measurement during SL DRX inactive time is enabled/disabled by “*partialSensingInactiveTime*”, same as partial sensing. [11] | [6] (3)  [11] (P3, P4) | N |
| 15 | Timing for reporting candidate resource set (*SA*) to higher layers is in slot when UE performs partial sensing. | [7] (TP#3) | N |
| 16 | When MAC layers provide resources for re-evaluation and pre-emption checking, the “*qth*” reservation period should be indicated to the PHY layer, i.e. the resources are within the *qth* reservation period as:   * If , the set of resources and the set of resources are in the *q*th reservation period (*q*=0,1,2,…, Cresel-1). | [9] (TP#1) | N |
| 17 | * Skip PBPS in slot during pre-emption checking due to the half-duplex issue where a prior SCI in slot was used to reserve the resource in slot . * When performing PBPS and/or CPS in re-evaluation and pre-emption checking, clarify that the sensing slots does not include slots in which the UE’s own transmission occur. | [9] (TP#2)  [12] (TP#5) | H |
| 18 | Determination of *Preserve*   * In *sl-ResourceReservePeriodList*, the value ms0 is always configured. So, the values of *Preserve* should correspond to all the non-zero periodicity from *sl-ResourceReservePeriodList.* | [9] (TP#4) | N |
| 19 | Clarification on in PBPS for aperiodic transmission:   * When the UE performs periodic-based partial sensing, the UE shall monitor slots at , where is a slot of the selected candidate slots except for the other candidate slots when is smaller than and … | [9] (TP#5) | N |
| 20 | When UE is required/enabled to perform SL reception of PSCCH and RSRP measurement on slots in SL DRX inactive time, the UE should monitor only ) logical slots for CPS instead of M. | [11] (P1, P2) | H |
| 21 | Clarify the steps to identify *SA* in re-evaluation and pre-emption checking for partial sensing. | [12] (TP#4) | N |
| 22 | Insufficient candidate resources during re-evaluation and pre-emption checking  - e.g., If the number of candidate single-slot resources is smaller than , it is up to UE implementation to include other candidate slots. | [12] (TP#6) | N |
| 23 | Update of spec description on the combination of RA scheme(s) allowed in a resource pool | [13] | N |
| 24 | Adding a description to the definition of *sl-ResourceReservedPeriodList* as:   * *sl-ResourceReservePeriodList* is the configured set of possible resource reservation periods allowed in the resource pool. | [13] | N |
| 25 | In the case of CPS-only for aperiodic Tx, clarify that the selected *Y’* candidate slots do not overlap with the CPS sensing window | [13] | N |
| 26 | Adding “…within the sidelink DRX active time of the RX UE in the set ” in Step 7a) | [13] | N |
| 27 | In re-evaluation and pre-emption checking, clarify that “UE performs CPS starting from at least *M* consecutive logical slots earlier than to slots earlier than taking into consideration associated processing times.” | [13] | N |
| 28 | * If not (pre-)configured, the UE monitors the most recent sensing occasion before the first slot of the candidate slots for the given periodicity used to determine periodic sensing occasions in periodic-based partial sensing. * When the resource pool is (pre-)configured with *allowedResourceSelectionConfig* including full sensing, and full sensing is ~~(pre-)~~configured in the UE by higher layers, the UE performs full sensing. * The value of corresponds to *sl-PBPS-OccasionReservePeriodList* if pre-configured, otherwise, the values correspond to all periodicity from *sl-ResourceReservePeriodList.* | [2] (6.1) | E |
| 29 | RRC parameter name alignment:  - *sl-~~a~~AllowedResourceSelectionConfig*  - *sl-~~m~~MinNumCandidateSlotsPeriodic*  - *sl-~~m~~MinNumCandidateSlotsAperiodic*  - *sl-~~p~~PartialSensingInactiveTime* | [12] (TP#7) | E |
| 30 | - Optionally, minimum number of *Y* slots as *Y*\_min (*minNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the candidate resources corresponding to periodic-based partial sensing operation.  - Optionally, minimum number of slots as (*minNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the candidate resources corresponding to contiguous partial sensing operation. | [13] | E |

## Summary of company views on the maintenance issues to be treated

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| **Issue#** | **FL initial assessment** | **Companies’ inputs** |
| 1 | H | High priority or OK: 9  Non-essential: 3 |
| 2 | N | High priority or OK: 1  Non-essential: 10 |
| 3 | N | High priority or OK: 1  Non-essential: 10 |
| 4 | N | High priority or OK: 0  Non-essential: 11 |
| 5 | H | High priority or OK: 8  Non-essential: 4 |
| 6 | H | High priority or OK: 8  Non-essential: 3 |
| 7 | N | High priority or OK: 1  Non-essential: 11 |
| 8 | H | High priority or OK: 5  Non-essential: 6 |
| 9 | N | High priority or OK: 0  Non-essential: 12 |
| 10 | H | High priority or OK: 9  Non-essential: 2 |
| 11 | N | High priority or OK: 0  Non-essential: 11 |
| 12 | N | High priority or OK: 2  Non-essential: 9 |
| 13 | N | High priority or OK: 1  Non-essential: 9 |
| 14 | N | High priority or OK: 1  Non-essential: 10 |
| 15 | N | High priority or OK: 0  Non-essential: 11 |
| 16 | N | High priority or OK: 1  Non-essential: 10 |
| 17 | H | High priority or OK: 5  Non-essential: 6 |
| 18 | N | High priority or OK: 2  Non-essential: 9 |
| 19 | N | High priority or OK: 2  Non-essential: 9 |
| 20 | H | High priority or OK: 7  Non-essential: 5 |
| 21 | N | High priority or OK: 2  Non-essential: 9 |
| 22 | N | High priority or OK: 1  Non-essential: 10 |
| 23 | N | High priority or OK: 1  Non-essential: 9  Editorial: 1 |
| 24 | N | High priority or OK: 1  Non-essential: 9 |
| 25 | N | High priority or OK: 2  Non-essential: 9 |
| 26 | N | High priority or OK: 1  Non-essential: 9  Editorial: 1 |
| 27 | N | High priority or OK: 1  Non-essential: 10 |
| 28 | E | Editorial: 12 |
| 29 | E | Editorial: 12 |
| 30 | E | Editorial: 12 |

**FL recommendation**:

Based on the above outcome of company inputs and comments received during the first offline session on Monday, R17 eSL maintenance issues for “Resource allocation for power saving” to be addressed in RAN1#110 meeting are as followed.

* Issue #1
* [Issue #5]
* Issue #6
* [Issue #10]
* Issue #20
* Issue #28
* Issue #29
* Issue #30

## Discussion

## [ACTIVE] Issue #1: Update of Q formula in Step 6 for the 2nd most recent PSO

**Background:**

In RAN#1#109-e, the update for *Q* formula in Step 6c was discussed again. According to the FL summary at the end of meeting[X], the latest proposal has changed to the following so that the new updated Q formula is used only when the reservation periodicity indicated in the received SCI equals to the value to be used for PBPS. In this sense, the UE does not need to check every received in Step 6c).

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| **Proposal 1-1 (V):**  In Step 6 c) of TS38.214 Section 8.1.4, when UE is configured with partial sensing by its higher layer,  When *additionalPeriodicSensingOccasion* is (pre-)configured and if , and the sensing occasion belongs to for a given periodicity ,   * +1   otherwise,   * reuse the legacy *Q* procedure |

In the contribution submitted to this meeting, majority proposed to adopt the latest proposed version from RAN1#109-e, while one company propose no change and one company propose to use an old version of the proposal (Option 2 from RAN1#108-e) which lists out all the possible cases.

**FL assessment/comments:**

* This topic has been discussed for several meetings and companies who recognize this is an important issue that needs to be resolved continued to propose for a correction in this meeting. According to the submitted contributions, only one company proposed to use the old Option 2 solution from RAN1#108-e, while others are OK with the compromised version from RAN1#109-e.

**FL recommendation:** adopt the following Proposal 1 (I), which is the latest version from RAN1#109-e.

**Proposal 1 (I):**

In Step 6 c) of TS38.214 Section 8.1.4, when UE is configured with partial sensing by its higher layer,

When *additionalPeriodicSensingOccasion* is (pre-)configured and if , and the sensing occasion belongs to for a given periodicity ,

* +1

otherwise,

* reuse the legacy *Q* procedure

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| **Company** | **Comments** |
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## [ACTIVE] Issue #5: Conditions in which the UE performs CPS – whether UE performs or may perform CPS when all specified conditions are met

**Background:**

In RAN1#109-e, this issue was further discussed in detailed. It was pointed out by some that in some cases (e.g., when M CPS monitoring slots cannot be guarantee), the UE is allowed to perform random resource selection instead of partial sensing as it is already specified in 38.214. As such, the UE is not required to always perform CPS due to exceptional case(s). In all other cases, most companies but one think that the CPS should be always performed by the UE to detect aperiodic transmissions and reservations, which are allowed in all resource pool types. Similar situation applies to PBPS as well due to some exceptional cases. To handle the case of PBPS, it was agreed to update the spec description to “… the UE performs PBPS, unless stated otherwise in the specification” in the last meeting.

On the other hand, one argued that the UE should not always required to perform CPS (even in non-exceptional case) for two reasons. Firstly, when sufficient PBPS sensing results are available, the UE does not require to additionally perform CPS. Secondly, as brought up in [4], there is still an open FFS issue from RAN1#106-e where “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) enable.”. If this FFS issue is not resolved, then CPS and PBPS should not both be performed together when is sl-MultiReserveResource enabled.

**FL assessment/comments:**

* This topic has been discussed for several meetings and companies who recognize this is an important issue that needs to be resolved continued to brought it to RAN1 meetings.
* Technically, if the specification is not corrected, it will have impact in the following cases
  + When sl-MultiReserveResource is disabled, if the UE is allowed to not always perform CPS (even when there is a sufficient M slots), effectively the UE will perform random selection even when higher layer configured partial sensing to L1.
  + When sl-MultiReserveResource is enabled, in order for the UE to obtain sufficient PBPS sensing to replace/cover the 32 slots of CPS monitoring window, Preserve = 32 and 16 needs to be (pre-)configured for the resource pool for the most recent PSO and the second most recent PSO. Furthermore, the selected Y candidate slots needs to be at least 32 and 16 slots for Preserve = 32 and 16, respectively. There seems to be at least some restrictions need to be applied so that CPS can be skipped by the UE and not to miss any aperiodic reservations. Otherwise, there will be a performance impact.
* All-in-all, if the CPS monitoring of 32 slots is covered by PBPS, by requiring the UE to perform CPS will not additionally consume more processing power, since the UE will not sense the same slot twice due to overlapped PBPS and CPS sensing. Furthermore, UE performance in sl-MultiReserveResource disabled resource pool should not be degraded.

**FL recommendation:** adopt the following Proposal 2 (I), which has the same specification handling for PBPS from RAN1#109-e.

**Proposal 2 (I):** The following TP correction is to be made in TS38.214 Section 8.1.4.

“*When a UE is triggered by higher layer to report resources for resource (re-)selection in a mode 2 Tx pool, the resource pool is (pre-)configured with allowedResourceSelectionConfig including partial sensing, and partial sensing is configured by higher layer, the UE ~~may~~ performs contiguous partial sensing, unless stated otherwise in the specification*.”

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| **Company** | **Comments** |
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## [ACTIVE] Issue #6: Selection of Y or Y’ candidate slots to be based on periodic or aperiodic Tx

**Background:**

It is pointed out that according to the agreements of last few meetings, the selection of *Y* and *Y’* candidate slots are based on periodic and aperiodic transmission, respectively. It is only when UE is performing periodic transmission, the Y candidate slots are used for resource selection. When UE is triggered for aperiodic transmission, the UE should select *Y’* candidate slots even if the UE is also performing PBPS in the same resource pool. Furthermore, when UE is performing periodic transmission, both PBPS and CPS are to be performed by the UE. In this case, *Y* candidate slots should be selected and used, but not the *Y’*. As such, it is based on this main reason the spec description should be corrected.

**FL assessment/comments:**

* After reviewing different TPs, it is best to use “Prsvp\_TX≠0” and “Prsvp\_TX=0” to represent periodic and aperiodic transmission, respectively.

**FL recommendation:** adopt the following TP in Proposal 3 (I).

**Offline consensus:**

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

**<Unchanged parts omitted>**

**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>**

The following higher layer parameters affect this procedure:

**<Unchanged parts omitted>**

- Optionally, minimum number of *Y* slots as (*minNumCandidateSlotsPeriodic*), which indicates the minimum number of *Y* slots that are included in the resources if *P*rsvp\_TX*≠*0.

- Optionally, minimum number of slots as (*minNumCandidateSlotsAperiodic*), which indicates the minimum number of slots that are included in the resources if *P*rsvp\_TX*=*0.

**<Unchanged parts omitted>**

The following steps are used:

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 if *P*rsvp\_TX*≠0*, 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

- 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 . 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 .

**<Unchanged parts omitted>**

The UE monitors *k* sensing occasions determined by *sl-Additional-PBPS-Occasion*, as previously described, and not earlier than . For a given periodicity , 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. is the first slot of the selected *Y* candidate slots.

When the UE performs periodic-based partial sensing and contiguous partial sensing with periodic reservation for another TB (*sl-MultiReserveResource*) enabled, 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, 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.

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

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| **Company** | **Comments** |
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## [ACTIVE] Issue #10: Corrections on CPS sensing window

**Background:**

From reviewing the contributions submitted to this meeting, there are several small issues identified for two of specification paragraphs in Step 2) of Mode 2 resource selection in 38.214. These proposed small corrections are directly related to CPS monitoring operation. Hence, companies have combined them all in the same TP. These issues are:

* The first paragraph is meant to CPS monitoring for periodic transmission (when ). Hence companies have proposed to delete the term PBPS from the paragraph. And since the whole paragraph is about periodic Tx, so it is better to state this condition at the beginning.
* Secondly, since periodic transmission can only happen in pools with *sl-MultiReserveResource* enabled, it is not necessary to have this as a condition in the first paragraph. More importantly for the second paragraph, since the described CPS operation is for aperiodic transmissions regardless of *sl-MultiReserveResource* is enabled or disabled, this condition should be removed.
* Thirdly, in the first paragraph, since the condition when the minimum M slots for CPS cannot be guaranteed is only for the case of , this sentence at the end of the first paragraph should be deleted.
* Fourthly, the definition for is missing in the second paragraph.

**FL recommendation:** adopt the following TP in Proposal 5 (I).

**Proposal 4 (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 contiguous partial sensing and if , 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, 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 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** |
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## [ACTIVE] Issue #20: CPS monitoring length of slots in SL DRX inactive time

**Background:**

When partial sensing on slots in SL DRX inactive time is enabled by higher layer parameter *partialSensingInactiveTime*, the UE should not perform CPS for a total of M slots due to UE processing time ( and ). Hence the CPS monitoring length of slots should be corrected.

**FL recommendation:** adopt the following TP in Proposal 7 (I).

**Proposal 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>**

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 *partialSensingInactiveTime.* When it is enabled, if UE performs periodic-based partial sensing on the slots in SL DRX inactive time for a given , 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, where andare equal toandconverted to logical slots and *M* is (pre-)configured with *contiguousSensingWindowAperiodic* for or *contiguousSensingWindowPeriodic* for otherwise *M* is 31.

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

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| **Company** | **Comments** |
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## [ACTIVE] Issue #28, 29, 30: Editorial corrections

**Offline consensus:**

**-------------------------------- 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, the indication of resource selection mechanism(s), as *sl-AllowedResourceSelectionConfig*, which may comprise of full sensing only, partial sensing only, random resource selection only, or any combination(s) thereof.

**<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 operation.

- 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.

- Optionally, sensing occasion as *sl-PBPS-OccasionReservePeriodList,* which indicates the subset of periodicity values from *sl-ResourceReservePeriodList* used to determine periodic sensing occasions in periodic-based partial sensing. If not configured, all periodicity values from *sl-ResourceReservePeriodList* are used to determine periodic sensing occasions in periodic-based partial sensing.

- Optionally, additional sensing occasions as *sl-Additional-PBPS-Occasion*, which indicates that UE additionally monitors periodic sensing occasions that correspond to a set of values. The possible values of the set at least includes the most recent sensing occasion before the first slot of the candidate slots for a given reservation periodicity and the last periodic sensing occasion prior to the most recent one for the given reservation periodicity. If not (pre-)configured, the UE monitors the most recent sensing occasion before the first slot of the candidate slots for the given periodicity used to determine periodic sensing occasions in periodic-based partial sensing.

- Optionally, indication of the size in logical slots of contiguous partial sensing window for periodic transmissions as defined by the parameter *sl-CPS-WindowPeriodic*.

Optionally, indication of the size in logical slots of contiguous partial sensing window for aperiodic transmissions as defined by the parameter *sl-CPS-WindowAperiodic.*

- Optionally, indication of whether UE is required to perform SL reception of PSCCH and RSRP measurement for partial sensing on slots in SL DRX inactive time as *sl-PartialSensingInactiveTime.*

**<Unchanged parts omitted>**

When the resource pool is (pre-)configured with *sl-AllowedResourceSelectionConfig* including full sensing, and full sensing is configured in the UE by higher layers, the UE performs full sensing.

When periodic reservation for another TB (sl-MultiReserveResource) is enabled for the resource pool, the resource pool is (pre-)configured with *sl-AllowedResourceSelectionConfig* including partial sensing, and partial sensing is configured by higher layer, the UE performs periodic-based partial sensing, unless other conditions state otherwise in the specification.

When a UE is triggered by higher layer to report resources for resource (re-)selection in a mode 2 Tx pool, the resource pool is (pre-)configured with *sl-AllowedResourceSelectionConfig* including partial sensing, and partial sensing is configured by higher layer, the UE may perform contiguous partial sensing.

**<Unchanged parts omitted>**

The value of corresponds to *sl-PBPS-OccasionReservePeriodList* if (pre-)configured, otherwise, the values correspond to all periodicity from *sl-ResourceReservePeriodList.*

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

## Reference

1. [R1-2205766](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2205766.zip) Remaining issues on maintenance of Rel-17 sidelink enhancements Huawei, HiSilicon
2. [R1-2206096](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2206096.zip) Maintenance on NR SL enhancement ZTE, Sanechips
3. [R1-2206283](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2206283.zip) Remaining essential issues in R17 NR sidelink enhancement OPPO
4. [R1-2206360](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2206360.zip) Maintenance on NR sidelink enhancement CATT, GOHIGH
5. [R1-2206447](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2206447.zip) Remaining issues on resource allocation for sidelink enhancement Lenovo
6. [R1-2206763](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2206763.zip) Maintenance on NR Sidelink enhancement vivo
7. [R1-2206804](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2206804.zip) Maintenance on NR sidelink enhancement Samsung
8. [R1-2206890](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2206890.zip) Maintenance on NR Sidelink enhancement CMCC
9. [R1-2206936](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2206936.zip) Remaining issues on NR sidelink enhancement Sharp
10. [R1-2207146](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207146.zip) Remaining issues on R17 SL Enhancement InterDigital, Inc.
11. [R1-2207313](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207313.zip) On Maintenance of NR Sidelink Enhancement Apple
12. [R1-2207386](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207386.zip) Maintenance of sidelink enhancement NTT DOCOMO, INC.
13. [R1-2207563](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207563.zip) Critical corrections and remaining issues on NR SL enhancement Ericsson
14. [R1-2205064](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_109-e/Docs/R1-2205064.zip) FL summary for AI 8.11.1 – Maintenance on NR sidelink resource allocation for power saving (EOM), Moderator (OPPO)