**3GPP TSG RAN WG1 Meeting#117**

**Fukuoka city, Fukuoka, Japan, May 20th – 24th, 2024R1-24xxxxx**

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| *CR-Form-v12.0* |
| **DRAFT CHANGE REQUEST** |
|  |
|  | **37.213** | **CR** | **-** | **rev** | - | **Current version:** | **18.2.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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|  |
| ***Title:***  | Maintenance of NR Sidelink operation on shared spectrum |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | R1 |
|  |  |
| ***Work item code:*** | NR\_SL\_enh2-Core |  | ***Date:*** | 2024-05-28 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-18 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | The following agreement was made in RAN1#117AgreementAdopt RRC parameter alignment TP#2 in Section 4.2.1 of R1-2405353 for TS 37.213 v18.2.0. |
|  |  |
| ***Summary of change:*** | The changes captured by the agreement above. |
|  |  |
| ***Consequences if not approved:*** | Incomplete or ambiguous specifications |
|  |  |
| ***Clauses affected:*** | 4.5, 4.5.4, 4.5.5, 4.5.5.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

##

## 4.5 Sidelink Channel access procedures

A UE operating in sidelink resource allocation mode 1 or mode 2 and performing SL transmission(s) on channel(s) shall perform the procedures described in this clause for the UE to access the channel(s) on which the transmission(s) are performed.

In this clause, transmissions from a UE are considered as separate SL transmissions, irrespective of having a gap between transmissions or not, and for sensing is adjusted as described in clause 4.5.5 when applicable.

A UE can access a channel on which SL transmission(s) are performed according to one of Type 1 or Type 2 SL channel access procedures as described in clauses 4.5.1 and 4.5.2, respectively.

When a UE applies Type 1 channel access procedures to transmit SL transmission(s), the applicable channel access priority class (CAPC) is defined in Table 4.5-1.

When a UE applies Type 1 channel access procedures to transmit SL transmission(s) including PSSCH with user plane data and associated PSCCH, the UE determines the corresponding SL channel access priority class in Table 4.5-1 following the procedures described in Clause 16.9.x.2 in [9].

When a UE applies Type 1 channel access procedures to transmit SL transmission(s) including only PSFCH or only S-SSB transmission(s), the UE shall use the channel access priority class in Table 4.5-1.

A UE shall not transmit on a channel for a *Channel Occupancy Time* that exceeds where the channel access procedure is performed based on the channel access priority class associated with the UE transmissions, as given in Table 4.5-1.

When a UE applies Type 1 channel access procedure to initiate a channel occupancy for multiple SL transmissions over one slot or multiple consecutive slots, the highest CAPC value among the associated CAPC values with the multiple SL transmissions is used for performing the Type 1 channel access procedure.

If a UE fails to access the channel(s) prior to an intended SL transmission(s), Layer 1 notifies higher layers about the channel access failure and the channel(s) that the UE fails to access.

Table 4.5-1: Channel Access Priority Class (CAPC) for SL

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Channel Access Priority Class () |  |  |  |  | allowed sizes |
| 1 | 2 | 3 | 7 | 2 ms | {3,7} |
| 2 | 2 | 7 | 15 | 4 ms | {7,15} |
| 3 | 3 | 15 | 1023 | 6ms or 10 ms  | {15,31,63,127,255,511,1023} |
| 4 | 7 | 15 | 1023 | 6ms or 10 ms | {15,31,63,127,255,511,1023} |
| NOTE1: For , if the higher layer parameter *absenceOfAnyOtherTechnology-r18* is provided, otherwise, . NOTE 2: When it may be increased to by inserting one or more gaps. The minimum duration of a gap shall be . The maximum duration before including any such gap shall be .  |

For contiguous SL transmission(s), the following are applicable:

- If a UE is scheduled or autonomous selected to transmit a set of SL transmissions using one or more selected SL grant(s), and

- if the UE cannot access the channel for a transmission in the set prior to the last transmission according to Type 1 or Type 2A SL channel access procedures, the UE shall attempt to transmit the next transmission according to Type 1 or Type 2A SL channel access procedures.

- if the UE cannot access the channel for a transmission in the set prior to the last transmission according to Type 2B SL channel access procedure, the UE shall attempt to transmit the next transmission according to Type 2A SL channel access procedure.

For SL transmission(s) with multiple starting positions in a slot, the following are applicable:

- If a UE intends to transmit PSCCH/PSSCH in sidelink resource allocation mode 1 or mode 2 using a Type 1 channel access procedure, and if the UE cannot access the channel for the transmission from the 1st starting symbol of a slot, the UE shall attempt to transmit PSCCH/PSSCH from the 2nd starting symbol in the same slot according to Type 1 channel access procedure. There is no limit on the number of attempts the UE can make using Type 1 channel access procedure.

- If a UE intends to transmit PSCCH/PSSCH in sidelink resource allocation mode 1 or mode 2 using a Type 2 channel access procedure, and if the UE cannot access the channel for the transmission from the 1st starting symbol of a slot, the UE may attempt to transmit PSCCH/PSSCH from the 2nd starting symbol in the same slot and according to Type 2A channel access procedure.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* unchanged omitted \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 4.5.4 Contention window adjustment procedures for SL transmissions

If a UE transmits a SL transmission(s) including at least one PSSCH using Type 1 channel access procedures associated with the channel access priority class on a channel, the UE maintains the contention window value and adjusts before step 1 of the procedure described in clause 4.5.1 for the SL transmission(s) applying the following procedures:

1) For every priority class set .

2) If a HARQ-ACK feedback corresponding to the PSSCH(s) for unicast SL transmission(s) in the reference duration for the latest channel occupancy initiated by the UE, is available:

- If the HARQ-ACK feedback includes only 'ACK', go to step 1; otherwise go to step 5.

3) If a HARQ-ACK feedback corresponding to the PSSCH(s) for groupcast SL transmission(s) in the *reference duration* for the latest channel occupancy initiated by the UE, is available:

- If *harq-ACK-FeedbackRatioforCW-AdjustmentGC-Option2-r18* is provided by higher layers:

- The UE calculates the ratio between the number of received 'ACK' in the HARQ-ACK feedback and the number of UE(s) from which the corresponding 'ACK'/'NACK' in the HARQ-ACK feedback is expected. If the calculated ratio is equal to or larger than *harq-ACK-FeedbackRatioforCW-AdjustmentGC-Option2-r18*, go to step 1; otherwise go to step 5.

- Otherwise:

- If the HARQ-ACK feedback includes at least an 'ACK',go to step 1; otherwise go to step 5.

4) If a HARQ-ACK feedback corresponding to the PSSCH(s) in the reference duration for the latest channel occupancy initiated by the UE is not available, go to step 6.

5) Increase for every priority class to the next higher allowed value.

6) For every priority class ,maintain as it is; go to step 2.

The *reference duration* in the procedure above is defined as follows:

- The *reference duration* corresponding to a channel occupancy initiated by the UE including SL transmission(s) of PSSCH(s) is defined in this clause as a duration starting from the beginning of the channel occupancy initiated by the UE including SL transmission (s) of PSSCH(s) until the end of the first slot where at least one PSSCH with HARQ-ACK feedback(s) including 'ACK'/'NACK' is transmitted.

If a UE transmits a SL transmission(s) using Type 1 channel access procedures associated with the channel access priority class on a channel and the SL transmission(s) is not associated with explicit HARQ-ACK feedback(s) by the corresponding UE(s), the UE adjusts before step 1 in the procedures described in clause 4.5.1, using the latest used for any SL transmissions on the channel using Type 1 channel access procedures associated with the channel access priority class . If the corresponding channel access priority class has not been used for any SL transmissions on the channel, is used. For the channel, if the latest value is consecutively used for X times provided by higher layers parameter *sl-CWS-ForPsschWithoutHarqAck-r18* for generation of as described in clause 4.5.1 for PSSCH transmission(s) without associated explicit HARQ-ACK feedback(s), the is increased for every priority class to the next higher allowed value.

The following applies to the procedures described in this clause for contention window adjustment:

- If , the next higher allowed value for adjusting is .

- If the is consecutively used times for generation of , is reset to only for that priority class for which is consecutively used times for generation of . is selected by UE from the set of values {1, 2, …,8} for each priority class .

### 4.5.5 Energy detection threshold adaptation procedure

A UE accessing a channel on which SL transmission(s) are performed, shall set the energy detection threshold () to be less than or equal to the maximum energy detection threshold .

 is determined as follows:

- If the UE is configured with higher layer parameter *sl-MaxEnergyDetectionThreshold-r18*,

- is set equal to the value signalled by the higher layer parameter;

- otherwise

- the UE shall determine according to the procedure described in clause 4.5.5.1;

- if the UE is configured with higher layer parameter *sl-EnergyDetectionThresholdOffset-r18*

- is set by adjusting according to the offset value signalled by the higher layer parameter;

- otherwise

- the UE shall set .

If the higher layer parameter *absenceOfAnyOtherTechnology-r18* is not configured to a UE, the UE that performs channel access procedures to initiate a channel occupancy to be shared to other UE(s), and another UE that shares the initiated channel occupancy as described in clause 4.5.3 shall use the (pre-)configured *ue-ToUE-COT-SharingED-Threshold-r18* for accessing the channel(s).

For the case where a UE performs channel access procedures as described in clause 4.5.1 for SL transmission(s) and indicates channel occupancy sharing information, is set equal to the value provided by the higher layer parameter *ue-ToUE-COT-SharingED-Threshold-r18*.

#### 4.5.5.1 Default maximum energy detection threshold computation procedure

If the higher layer parameter *absenceOfAnyOtherTechnology-r18* is provided

- where

- is Maximum energy detection threshold defined by regulatory requirements in dBm when such requirements are defined, otherwise

otherwise

-

where

In regulatory regions and bands where it is allowed,

- = ;

- =5dB for all transmissions;

- ;

Otherwise,

- ;

- if Type 2A SL channel access procedures is performed for a SL transmission(s) that initiates a channel occupancy and includes only S-SSB as described in clause 4.5.2; otherwise ;

- or in regions and bands where regulations allow,;

- is set to the value of PCMAX\_H,*c* as defined in [3];

- ;

- is the single channel bandwidth in MHz.

The higher layer parameter *absenceOfAnyOtherTechnology-r18* is not expected to be provided if the channel(s) where UE performing SL transmission(s) is overlapped with either an LAA Scell(s) on channel(s) or channel(s) where gNB/UE performing DL/UL transmission(s).

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* unchanged omitted \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*