**3GPP TSG-RAN WG1 Meeting #106bis-e R1-21xxxxx**

**e-Meeting, October 11–19, 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **DRAFT CHANGE REQUEST** | | | | | | | | |
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|  | **37.213** | **CR** |  | **rev** |  | **Current version:** | **16.6.0** |  |
|  | | | | | | | | |
| *For* [***HELP***](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:*** | Introduction of features to extend current NR operation to 71 GHz | | | | | | | | | |
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| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_ext\_to\_71GHz-Core | | | | |  | ***Date:*** | | | 2021-11-01 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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 can be 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | Introduce features to support NR features in frequency range 2-2 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Support of NR featues in frequency range 2-2 | | | | | | | | |
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| ***Consequences if not approved:*** | | NR featues in frequency range 2-2 will be incomplete | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.211, TS 38.213, TS 38.214 | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

## 4.4 Channel access procedures for frequency range 2-2

[If a gNB would perform channel access procedures for performing DL transmission(s) on channel(s) or if the gNB provides UE(s) with higher layer parameters [TBD] by SIB1 or dedicated configuration indicating that the channel access procedures would be performed for performing UL transmission(s) on channel(s),] the channel access procedures described in this clause for accessing the channel(s) on which the transmission(s) are performed, are applied.

In this clause, when sensing is applicable, the basic unit for sensing is a sensing slot with a duration . The channel is considered to be idle for the sensing slot duration if a gNB or a UE senses the channel during the sensing slot duration and determines that the detected enery within the sensing slot duration is less than energy detection threshold as described in Clause 4.4.7. Otherwise, the channel is considered busy for the sensing slot duration .

### 4.4.1 Type 1 channel access procedures

This clause describes channel access procedures to be performed by a gNB/UE where the time duration spanned by the sensing slots that are sensed to be idle before a transmission(s) is random based on a fixed contention window size. The clause is applicable to any transmission initiating a channel occupancy by the gNB/UE.

The gNB/UE may transmit a transmission after first sensing the channel to be idle during the sensing slot duration of a defer duration and after the counter is zero in step 4. The counter is adjusted by sensing the channel for additional sensing slot duration(s) according to the steps below:

1) set , where is a random number uniformly distributed between 0 and , and go to step 4;

2) if and the gNB/UE chooses to decrement the counter, set ;

3) sense the channel for an additional sensing slot duration, and if the channel is idle for the additional sensing slot duration, go to step 4; else, go to step 5;

4) if , stop; else, go to step 2.

5) sense the channel until either it is detected busy within an additional defer duration or it is detected to be idle for the sensing slot of the additional defer duration ;

6) if the channel is sensed to be idle during the sensing slot duration of the additional defer duration , go to step 4; else, go to step 5;

In the above procedures, is the contention window and . If a gNB/UE has not transmitted a transmission after step 4 in the procedure above, the gNB/UE may transmit a transmission on the channel, if the channel is sensed to be idle at least in a sensing slot duration when the gNB/UE is ready to transmit and if the channel has been sensed to be idle during the sensing slot duration of a defer duration immediately before this transmission. If the channel has not been sensed to be idle in a sensing slot duration when the gNB/UE first senses the channel after it is ready to transmit or if the channel has been sensed to be not idle during the sensing slot duration of a defer duration immediately before this intended transmission, the gNB/UE proceeds to step 1 after sensing the channel to be idle during the sensing slot duration(s) of a defer duration .

The defer duration is and includes a sensing slot duration for performing as least a single measurement to determine whether the channel is idle.

A gNB/UE shall not transmit on a channel for a *Channel Occupancy Time* that exceeds .

### 4.4.2 Type 2 channel access procedures

This clause describes channel access procedures to be performed by a gNB/UE where the time duration spanned by sensing slots that are sensed to be idle before a DL/UL transmission(s) is deterministic.

A gNB/UE may transmit a transmission(s) on a channel immediately after which includes a sensing slot with a duration where the channel is sensed to be idle.

### 4.4.3 Type 3 channel access procedures

A gNB/UE may transmit a transmission on a channel without sensing the channel.

### 4.4.4 Channel access procedures in a shared channel occupancy

If a gNB/UE initiates a channel occupancy using the channel access procedures described in clause 4.4.1 on a channel, the gNB/UE may transmit a DL/UL transmission burst(s) that is followed by a UL/DL transmission burst(s) within the maximum *Channel Occupancy Time* described in Clause 4.4.1. In this case, the following are applicable to the UL/DL transmission burst(s):

- the UL/DL transmission burst(s) occurs following the procedures described in Clause 4.4.3.

- if the gap between the UL/DL transmission burst(s) and previous DL/UL transmission burst(s) on the channel is at most [TBD], the UL/DL transmission burst(s) occurs following the procedures described in Clause 4.4.3. Otherwise, the UL/DL transmission burst(s) occurs following the procedures described in Clause 4.4.2.

### 4.4.5 Exempted transmissions from sensing

A gNB/UE may transmit the following transmission(s) on a channel without sensing the channel if the condition is satisfied that the corresponding transmission(s) on the channel in total do not occupy the channel more than over any interval:

- Transmission(s) of SSB by a gNB

- Transmission(s) of the first message in a random access procedures by a UE

### 4.4.6 Channel access procedures for transmission(s) on multiple channels

If a gNB/UE intends to transmit on a set of channels the gNB/UE shall perform channel access on each channel according to the procedures described in clause 4.4.1 to 4.4.5 when applicable.

### 4.4.7 Energy detection threshold adaptation procedures

A gNB/UE accessing a channel on which transmission(s) are performed, shall set the energy detection threshold to be less than or equal to the maximum energy detection threshold that is determined as follows:

where:

- is [the maximum EIRP of the node determining energy detection threshold (EDT) during a channel occupancy] in

- is the RF output power limit in as described in [TBD]

- is the [channel bandwidth or bandwidthpart bandwidth] in MHz.

### [4.4.8 Channel access procedures and UL related signaling]