**3GPP TSG RAN WG1 Meeting #110 R1-22xxxxx**

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

**Agenda item:** 7.2.2

**Source:** Sharp

**Title:** Summary of comments on R1-2206935 miscellaneous corrections to TS 37.213

**WI:** NR\_unlic-Core

**Document for:** Discussion and Decision

# Introduction

This document is a summary of comments collected for the following document [1],

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TDoc** | **Title** | **Source** | **Type** | **Release** | **Spec** | **Version** | **Related WIs** |
| [**R1-2206935**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_110/Docs/R1-2206935.zip) | Miscellaneous corrections to TS 37.213 | Sharp | draftCR | [**Rel-16**](https://portal.3gpp.org/desktopmodules/Release/ReleaseDetails.aspx?releaseId=191) | [**37.213**](https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=3435) | 16.9.0 | [**NR\_unlic-Core**](https://portal.3gpp.org/desktopmodules/WorkItem/WorkItemDetails.aspx?workitemId=820167) |

# Discussion

## Round 1

### Issue 1: “… ready to transmit” vs. “…first senses the channel after it is ready to transmit”

The following reason for change was copied from [1],

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| In clause 4.1.1, for the case where an eNB/gNB has not transmitted a transmission after step 4 in Type 1 channel access procedure, the corresponding paragraph was structured like “transmit if both condition A and condition B are fulfilled, and restart the channel access if either condition A or condition B is not fulfilled”. The description of “condition A” is currently different between the “fulfilled” case and the “not fulfilled” case, in terms of where the sensing slot is located, as follows:   * “… when the eNB/gNB is ready to transmit”; * “… when the eNB/gNB first senses the channel after it is ready to transmit”   The above two time instants are not necessarily exactly the same. |

The corresponding changes proposed in [1] were captured in TP#1 below.

#### TP#1 for TS 37.213

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| **<Unchanged parts are omitted>**  4.1.1 Type 1 DL channel access procedures  **<Unchanged parts are omitted>**  If an eNB/gNB has not transmitted a transmission after step 4 in the procedure above, the eNB/gNB may transmit a transmission on the channel, if the channel is sensed to be idle at least in a sensing slot duration when the eNB/gNB first senses the channel after it is ready to transmit and if the channel has been sensed to be idle during all the sensing slot durations of a defer duration immediately before this intended transmission. If the channel has not been sensed to be idle in a sensing slot duration when the eNB/gNB first senses the channel after it is ready to transmit or if the channel has been sensed to be not idle during any of the sensing slot durations of a defer duration immediately before this intended transmission, the eNB/gNB proceeds to step 1 after sensing the channel to be idle during the sensing slot durations of a defer duration .  **<Unchanged parts are omitted>** |

#### Q1: Do you agree with the proposed changes in TP#1?

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| **Company** | **Answer (Yes/No)** | **Comment** |
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### Issue 2: Definition of defer duration T\_d

The following reason for change was copied from [1],

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| In clause 4.1.1, in the paragraph describing what a defer duration T\_d consists of, the spec says “… T\_f includes an idle sensing slot duration T\_sl …” which is not always correct, because whether a sensing slot is idle or not depends on the actual sensing result. |

The corresponding changes proposed in [1] were captured in TP#2 below.

#### TP#2 for TS 37.213

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| **<Unchanged parts are omitted>**  4.1.1 Type 1 DL channel access procedures  **<Unchanged parts are omitted>**  The defer duration consists of duration immediately followed by consecutive sensing slot durations , and includes a sensing slot duration at start of .  **<Unchanged parts are omitted>** |

#### Q2: Do you agree with the proposed changes in TP#2?

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| **Company** | **Answer (Yes/No)** | **Comment** |
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### Issue 3: *“carrier* *”* vs*. “channel* *”*

The following reason for change was copied from [1],

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| In clause 4.1.6.2, “” was intended to be a notation of a channel (“channel ”, *i* = 0, 1, …, q-1), and this has been correctly reflected in that clause, in all occurrences of but one, where it is mistakenly written as “carrier ”. |

The corresponding changes proposed in [1] were captured in TP#3 below.

#### TP#3 for TS 37.213

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| **<Unchanged parts are omitted>**  4.1.6.2 Type B multi-channel access procedure  **<Unchanged parts are omitted>**  To transmit on channel ,  - for each channel , the eNB/gNB shall sense the channel for at least a sensing interval immediately before transmitting on channel , and the eNB/gNB may transmit on channel immediately after sensing the channel to be idle for at least the sensing interval . The channel is considered to be idle for if the channel is sensed to be idle during all the time durations in which such idle sensing is performed on the channel in given interval .  **<Unchanged parts are omitted>** |

#### Q3: Do you agree with the proposed changes in TP#3?

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| **Company** | **Answer (Yes/No)** | **Comment** |
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### Issue 4: “*slot*”vs.“*sensing slot*”

The following reason for change was copied from [1],

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| In clause 4.2.1.1, there is a mixed use of “sensing slot” and “slot”, where all occurrences of “slot” were actually intended to be “sensing slot” (i.e. a sensing slot with a duration as defined in clause 4.0). The mixed use of “sensing slot” and “slot” may cause confusion especially considering that “slot” is also used in the same specification for a totally different purpose, i.e. “slot” as defined in TS 38.211. |

The corresponding changes proposed in [1] were captured in TP#4 below.

#### TP#4 for TS 37.213

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| **<Unchanged parts are omitted>**  4.2.1.1 Type 1 UL channel access procedure  **<Unchanged parts are omitted>**  A UE may transmit the transmission using Type 1 channel access procedure after first sensing the channel to be idle during the sensing slot durations 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 described below.  1) set , where is a random number uniformly distributed between 0 and , and go to step 4;  2) if and the UE chooses to decrement the counter, set ;  3) sense the channel for an additional sensing slot duration, and if the additional sensing slot duration is idle, go to step 4; else, go to step 5;  4) if , stop; else, go to step 2.  5) sense the channel until either a busy sensing slot is detected within an additional defer duration or all the sensing slots of the additional defer duration are detected to be idle;  6) if the channel is sensed to be idle during all the sensing slot durations of the additional defer duration , go to step 4; else, go to step 5;  If a UE has not transmitted a UL transmission on a channel on which UL transmission(s) are performed after step 4 in the procedure above, the 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 UE is ready to transmit the transmission and if the channel has been sensed to be idle during all the sensing slot durations of a defer duration immediately before the transmission. If the channel has not been sensed to be idle in a sensing slot duration when the UE first senses the channel after it is ready to transmit, or if the channel has not been sensed to be idle during any of the sensing slot durations of a defer duration immediately before the intended transmission, the UE proceeds to step 1 after sensing the channel to be idle during the sensing slot durations of a defer duration .  The defer duration consists of duration immediately followed by consecutive sensing slot durations where each sensing slot duration is , and includes an idle sensing slot duration at start of .  **<Unchanged parts are omitted>** |

#### Q4: Do you agree with the proposed changes in TP#4?

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| **Company** | **Answer (Yes/No)** | **Comment** |
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### Issue 5: Typos

It was proposed in [1] to correct a few typos, which were captured in TP#5 below.

#### TP#5 for TS 37.213

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| **<Unchanged parts are omitted>**  4.1.4.3 Common procedures for CWS adjustments for DL transmissions  The following applies to the procedures described in clauses 4.1.4.1 and 4.1.4.2:  - 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 eNB/gNB from the set of values {1, 2, …,8} for each priority class .  **<Unchanged parts are omitted>**  4.1.6.2 Type B multi-channel access procedure  **<Unchanged parts are omitted>**  To transmit on channel ,  - for each channel , the eNB/gNB shall sense the channel for at least a sensing interval immediately before transmitting on channel , and the eNB/gNB may transmit on carrier immediately after sensing the channel to be idle for at least the sensing interval . The channel is considered to be idle for if the channel is sensed to be idle during all the time durations in which such idle sensing is performed on the channel in given interval .  **<Unchanged parts are omitted>**  4.2.1.0.4 Channel access procedures for UL multi-channel transmission(s)  **<Unchanged parts are omitted>**  - the UE may not transmit on a channel within the bandwidth of a carrier if the UE is configured without intra-cell guard band(s) on an UL bandwidth part as described in clause 7 of [8], and the UE fails to access any of the channels of the UL bandwidth part.  **<Unchanged parts are omitted>**  4.2.1.2.1 Type 2A UL channel access procedure  If a UE is indicated to perform Type 2A UL channel access procedures, the UE uses Type 2A UL channel access procedures for a UL transmission. The UE may transmit the transmission immediately after sensing the channel to be idle for at least a sensing interval . consists of a duration immediately followed by one sensing slot and includes a sensing slot at start of . The channel is considered to be idle for if both sensing slots of .are sensed to be idle.  **<Unchanged parts are omitted>** |

#### Q5: Do you agree with the proposed changes in TP#5?

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| **Company** | **Answer (Yes/No)** | **Comment** |
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# Summary and conclusion

TBD

# Reference

[1] R1-2206935, “Miscellaneous corrections to TS 37.213”, Sharp, RAN1#110.