TSG-RAN WG1 #112b-e R1-23xxxxx

e-meeting, April 17 – 26, 2023

Source: Ericsson

Title: Draft CR 38.211 – NR\_MC\_enh-Core

Agenda Item: 9.18

Document for: Discussion and Decision

# Introduction

This thread will discuss the draft CR to 38.211 for NR\_MC\_enh-Core.

# Discussion – first round

The draft CR is available in R1-2302741

First checkpoint: April 20, UTC 17.00

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| Company | Comments |
| Xiaomi | On 6.4.1.1.1.2 of the draft CR:

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| For a CORESET configured by the *ControlResourceSet* IE: […]- if the higher-layer parameter *dmrs-UplinkTransformPrecoding* is configured, π/2-BPSK modulation is used for PUSCH, and the PUSCH transmission is not a msg3 transmission, and the transmission is not scheduled using DCI format 0\_0 in a common search space, $r\_{u,v}^{\left(α,δ\right)}(n)$ is given by clause 5.2.3 with $c\_{init}$ given by$$c\_{init}=\left(2^{17}\left(N\_{symb}^{slot}n\_{s,f}^{μ}+l+1\right)\left(2N\_{ID}^{n\_{SCID}}+1\right)+2N\_{ID}^{n\_{SCID}}+n\_{SCID}\right)mod 2^{31}$$ where $n\_{SCID}=0$ unless given by the DCI according to clause 7.3.1.1.2 in [4, TS38.212] for a transmission scheduled by DCI format 0\_1, or given by the DCI according to clause 7.3.1.1.3 in [4, TS38.212] for a transmission scheduled by DCI format 0\_2 if the antenna ports field in the DCI format 0\_2 is not 0 bit, or given by the DCI according to clause 7.3.1.1.4 in [4, TS38.212] for a transmission scheduled by DCI format 0\_3 if the antenna ports field in the DCI format 0\_3 is not 0 bit, or given by the higher-layer parameter *antennaPort* for a PUSCH transmission scheduled by a type-1 configured grant; and- $N\_{ID}^{0},N\_{ID}^{1}\in \left\{0,1,…,65535\right\}$ are given by the higher-layer parameters *pi2BPSK-ScramblingID0* and *pi2BPSK-ScramblingID1*, respectively, in the *DMRS-UplinkConfig* IE if provided and the PUSCH is scheduled by DCI format 0\_1, or by DCI format 0\_2 if the antenna ports field in the DCI format 0\_2 is not 0 bit, or by DCI format 0\_3 if the antenna ports field in the DCI format 0\_3 is not 0 bit, or by a PUSCH transmission with a configured grant;- $N\_{ID}^{0}\in \left\{0,1,…,65535\right\}$ is given by the higher-layer parameter *pi2BPSK-ScramblingID0* in the *DMRS-UplinkConfig* IE if provided and the PUSCH is scheduled by DCI format 0\_0 with the CRC scrambled by C-RNTI, MCS-C-RNTI, or CS-RNTI, or by DCI format 0\_2 if the antenna ports field in the DCI format 0\_2 is 0 bit, or by DCI format 0\_3 if the antenna ports field in the DCI format 0\_3 is 0 bit; |

According to the CR for 38.212 [R1-2303803] and discussion paper of [R1-2212924], it seems that the *Antenna ports* field in the DCI format 0\_3 is designed referring to the *Antenna ports* field in the DCI format 0\_1. In this case, the *Antenna ports* field in the DCI format 0\_3 may be impossible to occupy 0 bit. To align with the description of [R1-2303803], the draft CR on 6.4.1.1.1.2 can be modified as follows:

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| For a CORESET configured by the *ControlResourceSet* IE: […]- if the higher-layer parameter *dmrs-UplinkTransformPrecoding* is configured, π/2-BPSK modulation is used for PUSCH, and the PUSCH transmission is not a msg3 transmission, and the transmission is not scheduled using DCI format 0\_0 in a common search space, $r\_{u,v}^{\left(α,δ\right)}(n)$ is given by clause 5.2.3 with $c\_{init}$ given by$$c\_{init}=\left(2^{17}\left(N\_{symb}^{slot}n\_{s,f}^{μ}+l+1\right)\left(2N\_{ID}^{n\_{SCID}}+1\right)+2N\_{ID}^{n\_{SCID}}+n\_{SCID}\right)mod 2^{31}$$ where $n\_{SCID}=0$ unless given by the DCI according to clause 7.3.1.1.2 in [4, TS38.212] for a transmission scheduled by DCI format 0\_1, or given by the DCI according to clause 7.3.1.1.3 in [4, TS38.212] for a transmission scheduled by DCI format 0\_2 if the antenna ports field in the DCI format 0\_2 is not 0 bit, or given by the DCI according to clause 7.3.1.1.4 in [4, TS38.212] for a transmission scheduled by DCI format 0\_3 ~~if the antenna ports field in the DCI format 0\_3 is not 0 bit~~, or given by the higher-layer parameter *antennaPort* for a PUSCH transmission scheduled by a type-1 configured grant; and- $N\_{ID}^{0},N\_{ID}^{1}\in \left\{0,1,…,65535\right\}$ are given by the higher-layer parameters *pi2BPSK-ScramblingID0* and *pi2BPSK-ScramblingID1*, respectively, in the *DMRS-UplinkConfig* IE if provided and the PUSCH is scheduled by DCI format 0\_1, or by DCI format 0\_2 if the antenna ports field in the DCI format 0\_2 is not 0 bit, or by DCI format 0\_3 ~~if the antenna ports field in the DCI format 0\_3 is not 0 bit~~, or by a PUSCH transmission with a configured grant;- $N\_{ID}^{0}\in \left\{0,1,…,65535\right\}$ is given by the higher-layer parameter *pi2BPSK-ScramblingID0* in the *DMRS-UplinkConfig* IE if provided and the PUSCH is scheduled by DCI format 0\_0 with the CRC scrambled by C-RNTI, MCS-C-RNTI, or CS-RNTI, or by DCI format 0\_2 if the antenna ports field in the DCI format 0\_2 is 0 bit~~, or by DCI format 0\_3 if the antenna ports field in the DCI format 0\_3 is 0 bit~~; |

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**Editor proposal:**

I will update the draft CR as suggested above.

# Discussion – second round

An updated draft CR is uploaded here: [https://www.3gpp.org/ftp/TSG\_RAN/WG1\_RL1/TSGR1\_112b-e/Inbox/drafts/9.18(Other)/%5B112bis-e-R18-38.211-NR\_MC\_enh%5D/R1-23xxxxx%20draft%20CR%2038.211%20NR\_MC\_enh-Core%20v2.docx](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_112b-e/Inbox/drafts/9.18%28Other%29/%5B112bis-e-R18-38.211-NR_MC_enh%5D/R1-23xxxxx%20draft%20CR%2038.211%20NR_MC_enh-Core%20v2.docx)

Second checkpoint: April 25, UTC 17.00

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| Company | Comments |
| Nokia/NSB | 7.3.1.6 – VRB mappingLooking at the current situation on the RRC parameter discussions, there seems to be no different VRB interleaver configurable (but to reuse the one from 1\_3, as also captured in 212). So maybe the following change could be done there:

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| 7.3.1.6 Mapping from virtual to physical resource blocks...- for all other PDSCH transmissions, the set of $N\_{BWP,i}^{size}$ resource blocks in bandwidth part  with starting position $N\_{BWP,i}^{start}$ are divided into $N\_{bundle}=\left⌈{\left(N\_{BWP,i}^{size}+\left(N\_{BWP,i}^{start} mod L\_{i}\right)\right)}/{L\_{i}}\right⌉$ resource-block bundles in increasing order of the resource-block number and bundle number where  is the bundle size for bandwidth part  provided by the higher-layer parameter *vrb-ToPRB-Interleaver* for DCI formats 1\_0, ~~and~~ 1\_1 and 1\_3 in a UE-specific search space, or *vrb-ToPRB-InterleaverDCI-1-2* for DCI format 1\_2, ~~or~~ *~~vrb-ToPRB-InterleaverDCI-1-3~~* ~~for DCI format 1\_3~~ and |

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| Xiaomi | Sec.6.4.1.1.1.2The main bullet has illustrated the transmission scheduled by DCI 0\_3 corresponding to the $n\_{SCID}=0$ and $n\_{SCID}$=1 case. Hence, the DCI 0\_3 under second sub-bullet for $n\_{SCID}=0$ should be removed.

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| 6.4.1.1.1.2 Sequence generation when transform precoding is enabled……- if the higher-layer parameter *dmrs-UplinkTransformPrecoding* is configured, π/2-BPSK modulation is used for PUSCH, and the PUSCH transmission is not a msg3 transmission, and the transmission is not scheduled using DCI format 0\_0 in a common search space, $r\_{u,v}^{\left(α,δ\right)}(n)$ is given by clause 5.2.3 with $c\_{init}$ given by$$c\_{init}=\left(2^{17}\left(N\_{symb}^{slot}n\_{s,f}^{μ}+l+1\right)\left(2N\_{ID}^{n\_{SCID}}+1\right)+2N\_{ID}^{n\_{SCID}}+n\_{SCID}\right)mod 2^{31}$$ where $n\_{SCID}=0$ unless given by the DCI according to clause 7.3.1.1.2 in [4, TS38.212] for a transmission scheduled by DCI format 0\_1, or given by the DCI according to clause 7.3.1.1.3 in [4, TS38.212] for a transmission scheduled by DCI format 0\_2 if the antenna ports field in the DCI format 0\_2 is not 0 bit, or given by the DCI according to clause 7.3.1.1.4 in [4, TS38.212] for a transmission scheduled by DCI format 0\_3, or given by the higher-layer parameter *antennaPort* for a PUSCH transmission scheduled by a type-1 configured grant; and- $N\_{ID}^{0},N\_{ID}^{1}\in \left\{0,1,…,65535\right\}$ are given by the higher-layer parameters *pi2BPSK-ScramblingID0* and *pi2BPSK-ScramblingID1*, respectively, in the *DMRS-UplinkConfig* IE if provided and the PUSCH is scheduled by DCI format 0\_1, or by DCI format 0\_2 if the antenna ports field in the DCI format 0\_2 is not 0 bit, or by DCI format 0\_3, or by a PUSCH transmission with a configured grant;- $N\_{ID}^{0}\in \left\{0,1,…,65535\right\}$ is given by the higher-layer parameter *pi2BPSK-ScramblingID0* in the *DMRS-UplinkConfig* IE if provided and the PUSCH is scheduled by DCI format 0\_0 with the CRC scrambled by C-RNTI, MCS-C-RNTI, or CS-RNTI, or by DCI format 0\_2 if the antenna ports field in the DCI format 0\_2 is 0 bit~~, or by DCI format 0\_3~~; |

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