**3GPP TSG RAN WG1 #100bis-e R1-20xxxxx**

**e-Meeting, 20th – 30th April, 2020**

**Agenda item:** 7.2.11

**Source:** Moderator (NTT DOCOMO, INC.)

**Title:** Summary on email discussion [100b-e-NR-UEFeatures-Remaining] NR\_IIoT

**Document for:** Discussion and Decision

1. Introduction

This contribution summarizes the following email discussion in AI 7.2.11 regarding Rel-16 NR UE features.

[100b-e-NR-UEFeatures-Remaining] Email discussion/approval of remaining issues (especially the one identified as low priority items in FL’s summaries) starting no earlier than 4/30 till next meeting – Hiroki (DCM)/Ralf (ATT)

Companies are encouraged to check further updates for UE features list based on R1-2003073 shown below and provide feedback if any. Please note that the target of this email discussion is to reflect agreeable updates rather than solving any controversial discussion point. If there is any controversial discussion point, it should be discussed in the next RAN1 meeting.

1. NR\_IIoT

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| Features | Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | **Consequence if the feature is not supported by the UE** | **Type**  **( 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC)** | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory/Optional |
| 12. NR\_IIOT | 12-1 | UL intra-UE multiplexing/prioritization of overlapping channel/signals with two priority levels in physical layer | Support intra-UE multiplexing/prioritization of UL overlapping channels/signals with two priority levels in physical layer (PHY)   1. Configuration of PHY priority level for CG PUSCH and SR, and dynamic indication of priority level for dynamic PUSCH [with a single DCI format] 2. Multiplexing/prioritization between UL channels/signals with the same PHY priority level 3. Prioritization between UL channels/signals with different PHY priority levels 4. Additional number of symbols (d1) needed beyond the PUSCH preparation time for cancelling a low priority UL transmission. 5. Additional number of symbols (d2) needed beyond the PUSCH preparation time for scheduling a high priority UL transmission that cancels a low priority UL transmission | TBD | Yes | N/A |  | [Per UE] | [No] | [No] | [N/A] | [A UE supporting this feature shall also support the LCP restriction based on DCI priority indication ([*lch-ToGrantPriorityRestriction-r16*]) and intra-UE prioritization in MAC ([*lch-PriorityBasedPrioritization-r16*]).]  The relationship between this feature and the feature of up to two HARQ-ACK codebooks of 11-4 and 11-4xshould be further discussed. | Optional with capability signaling  Candidate value set for component 4: {0, 1, 2}  Candidate value set for component 5: {0, 1, 2} |
| 12. NR\_IIOT | [12-1a] | [UL priority indication in DCI with mixed DCI formats] | [UL priority indication in DCI with DCI format 0\_1 and 0\_2] | 12-1 11-1 TBD | Yes | N/A | FFS | Per UE | [No] | [No] | [N/A] |  | Optional with capability signalling |
| 12. NR\_IIOT | 12-2 | Multiple SPS configurations | 1. Support of up to 8 configured SPS configurations in a BWP of a serving cell [and up to 32 configured SPS configurations in a cell group,] including separate RRC parameters and separate activation/release for different SPS configurations 2. The max number of active SPS configurations in a BWP of a serving cell 3. The max number of active SPS configurations across all serving cells 4. The related HARQ-ACK enhancements to support multiple active SPS configurations | 5-18 DL SPS TBD | Yes | N/A |  | [Per UE] | [No] | [No] | [N/A] |  | Optional with capability signaling  Component-2, candidate value set is {1, 2, …, 8}  Component-3, candidate value set is [{2, …, [32]}] |
| 12. NR\_IIOT | 12-2a | Joint release in a DCI for two or more SPS configurations for a given BWP of a serving cell | 1. M<=4 bits indication in the Release DCI is used for indicating which SPS configuration(s) is/are released, where the association between each state indicated by the indication and the SPS configuration(s) is   • Up to 2^M states are higher layer configurable, where each of the state can be mapped to a single or multiple SPS configurations to be released  • In case of no higher layer configured state(s), separate release is used where the release corresponds to the SPS configuration index indicated by the indication   1. The related HARQ-ACK enhancements to support joint release | 12-2  TBD | Yes | N/A |  | [Per UE] | [No] | [No] | [N/A] |  | Optional with capability signaling |
| 12. NR\_IIOT | 12-3 | SPS release by DCI format 1\_1 | Support of SPS release by DCI format 1\_1 | 5-18 DL SPS  TBD | Yes | N/A |  | [Per UE] | [No] | [No] | [TBD] | [A UE supporting this FG and 11-1 (DCI format 0\_2/1\_2) shall also support FG12-3a (SPS release by DCI format 1\_2).] | Optional with capability signaling |
| 12. NR\_IIOT | 12-3a | SPS release by DCI format 1\_2 | Support of SPS release by DCI format 1\_2 | 5-18 DL SPS  11-1  TBD | Yes | N/A |  | [Per UE] | [No] | [No] | [TBD] |  | Optional with capability signaling |
| 12. NR\_IIOT | 12-5 | Configuration of aggregation factor per SPS configuration | Support of configurable PDSCH aggregation factor ({1, 2, 4, 8}) per DL SPS configuration | 5-18 DL SPS  TBD | Yes | N/A |  | [Per UE] | [No] | [No] | [N/A] |  | Optional with capability signaling |
| 12. NR\_IIOT | 12-6 | Support of SPS periodicity shorter than 10 ms | Support of SPS periodicity shorter than 10 ms | 5-18 DL SPS  TBD | Yes | N/A |  | [Per UE] | [No] | [No] | [N/A] |  | Optional with capability signalling |

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| Company | Comment |
| Nokia, NSB | 12-1: Ok to remove brackets from “[with a single DCI format]” in components description. OK to remove brackets from the notes relation to MAC feature. 11-4 should be a pre-requisite FG (to resolve the open issue in notes section). 12-1a: Ok to remove the brackets from the FG name & component.  12-2: OK to remove brackets in component description (this is aligned with RAN2 decision).  12-3: Ok to remove brackets from the notes.  Reporting type for all FGs in this table can be per UE, no xDD/FRy differentiation. |
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