**3GPP TSG RAN WG1#100bis-e R1-200xxxx**

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

**Agenda Item: 7.2.2.1.2**

**Source: Moderator (Lenovo)**

**Title: [Draft] Feature lead summary for NR-U DL Signals and Channels**

**Document for: Discussion, Decision**

# Introduction

This document summarizes issues raised by documents submitted to RAN1#100bis-e on AI 7.2.2.1.2, and identifies priorities for the email discussion.

Where easily available from documents, the corresponding proposals are listed below as "P#".

# Classification of corrections by topics and issues

The following topics and issues have been identified by submitted contributions. Since the number of email discussions is limited to 3 in RAN1#100bis-e, only a very limited set of issues can be discussed. It is understood by the FL however that more than the suggested 3 issues with "high priority" below should be seen as essential correction discussion items for Rel-16 NRU.

## Topic A: Search space

List of issues, proposals, and suggestions for handling in the email discussion phase.

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| --- | --- | --- | --- |
| Issue | Description | Reference Tdoc | FL comment |
| A1 | Search space group/set configuration | R1-2001532, P1-3  R1-2002029, P1-5  R1-2002630, P1-3 |  |
| A2 | Switching timer | R1-2001532, P5  R1-2001757, P3  R1-2002225, P1  R1-2002381, P1 |  |
| A3 | Processing time for switching | R1-2001532, P6  R1-2001703, P2  R1-2001902, P1  R1-2002029, P6  R1-2002115, P1  R1-2002320, P1-2  R1-2002528, P1 |  |
| A4 | Default SS group, incl. BWP switching | R1-2001650, P1-2  R1-2001757, P5  R1-2002054  R1-2002381, P2  R1-2001532, P4 |  |
| A5 | Search space set switching behaviour | R1-2001757, P1-2  R1-2001902, P2  R1-2001933, P7  R1-2002029, P7  R1-2002381, P3 |  |
| A6 | Search space BD adjustments/dropping | R1-2001933, P6  R1-2002225, P2-3  R1-2001538, P1 |  |

## Topic B: DCI format 2\_0, COT indication, RB set indication

List of issues, proposals, and suggestions for handling.

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| --- | --- | --- | --- |
| Issue | Description | Reference Tdoc | FL comment |
| B1 | Special states/indications in "available RB set indication" | R1-2001532, P8  R1-2001703, P3  R1-2001757, P14-15  R1-2001902, P4  R1-2001933, P4  R1-2001985, P1  R1-2002322, P1  R1-2002381, P9 |  |
| B2 | Switch CAT4 LBT to CAT2 LBT | R1-2001532, P9  R1-2002381, P7 |  |
| B3 | Indication of "out of COT" | R1-2001532, P10 |  |
| B4 | Reference subcarrier spacing for COT duration indication | R1-2001532, P11 |  |
| B5 | SFI presence in DCI format 2\_0 | R1-2001532, P12  R1-2001757, P6-7  R1-2001933, P2  R1-2002225, P5  R1-2002381, P6 |  |
| B6 | COT duration indication/determination | R1-2001650, P3  R1-2001933, P1+3  R1-2002381, P5 |  |
| B7 | Channel occupancy in FBE (semi-static channel access) | R1-2001902, P3  R1-2002225, P6  R1-2002528, P6-8 |  |
| B8 | Available RB sets configuration | R1-2001933, P5  R1-2002225, P4  R1-2002381, P8  R1-2002528, P5 |  |
|  |  |  |  |

## Topic C: PDSCH

List of issues, proposals, and suggestions for handling.

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| Issue | Description | Reference Tdoc | FL comment |
| C1 | PDSCH mapping on intra cell guard band | R1-2001532, P13  R1-2001985, P2 |  |
| C2 | CG PDSCH dropping | R1-2001757, P9-10  R1-2002115, P4 |  |
| C3 | FDRA interpretation with DCI 1\_0 in CSS | R1-2002115, P2 |  |

## Topic D: CSI-RS

List of issues, proposals, and suggestions for handling.

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| --- | --- | --- | --- |
| Issue | Description | Reference Tdoc | FL comment |
| D1 | CSI-RS measurements, incl. validity/presence of periodic/semi-persistent CSI-RS | R1-2001650, P4  R1-2001703, P4  R1-2001933, P8-11  R1-2002115, P3-4  R1-2002225, P7-9  R1-2002275, P1  R1-2002320, P3  R1-2002528, P2-4  R1-2001902, P5  R1-2002115, P3 |  |
| D2 | CSI-RS for tracking are confined to RB set | R1-2001757, P12 |  |

## Topic E: DMRS for PDSCH mapping type B

List of issues, proposals, and suggestions for handling.

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| --- | --- | --- | --- |
| Issue | Description | Reference Tdoc | FL comment |
| E1 | Shifting of DMRS | R1-2002054 |  |

# Capturing earlier agreements and spec alignment

The following issues have been identified as being agreed earlier, but having not been captured in the specs so far. It is suggested to discuss or reflect related proposals in the TP stage of RAN1#100bis-e.

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| --- | --- | --- |
| Issue | Description | Reference Tdoc |
| Z1 | Capture "For search space switching, limit the switching to USS and Type-3 CSS." | R1-2001703, P1  R1-2001532, P2 |
| Z2 | The terminology on the RB set indicator/Available RB set Indicator in TS38.213 and TS38.212 should be aligned. | R1-2001532, P7 |
| Z3 | Capture agreement of "No averaging of CSI-RS measurements across different transmission bursts" from UE perspective | R1-2001902, P5  R1-2002115, P3 |
| Z4 | Align RRC parameter list with TS38.213: Configurations of availableRB-SetPerCell-r16, CO-DurationPerCell-r16 and SearchSpaceSwitchTrigger-r16 should be added in SlotFormatCombinationsPerCell,  Propose to RAN2 to discard the “groupId” parameter defined under searchSpaceSwitchTrigger-r16, and remove the CHOICE structure | R1-2002381, P4  R1-2002029, P2 |

# List of submitted TDocs

The following TDocs have been used to compile above summary:

R1-2001532 Maintainance on DL signals and channels Huawei, HiSilicon

R1-2001650 Remaining issues on physical DL channel design in unlicensed spectrum vivo

R1-2001703 Remaining issues on the DL channels for NR-U ZTE, Sanechips

R1-2001757 Discussion on the remaining issues of DL signals and channels OPPO

R1-2001902 Remaining issues on DL signals and channels for NR-U MediaTek Inc.

R1-2001933 Remaining issues of DL signals and channels for NR-U LG Electronics

R1-2001985 DL signals and channels for NR-unlicensed Intel Corporation

R1-2002029 DL signals and channels Ericsson

R1-2002054 Maintenance for DL signals and channels for NR-U Panasonic Corporation

R1-2002115 DL signals and channels for NR-U Samsung

R1-2002225 Remaining issues on DL signals and channels Nokia, Nokia Shanghai Bell

R1-2002275 Remaining issues in DL signals and channels Spreadtrum Communications

R1-2002320 Remaining issues of DL signals and channels Apple

R1-2002381 Remaining issues and corrections on DL signals and channels for NR-U Sharp

R1-2002528 TP for DL signals and channels for NR-U Qualcomm Incorporated

R1-2002630 Text proposal for search space group switching Google Inc.