**3GPP TSG RAN WG1 Meeting #104bis-e R1-21xxxxx**

**E-Meeting, April 12th – April 20th, 2021**

**Agenda Item: 6.1**

**Source: Moderator (ZTE)**

**Title: Summary of email discussion on [104b-e-LTE-6.1CRs-01]**

**Document for: Discussion and Decision**

# Introduction

This contribution provides discussion on clarification related to Type1A-MPDCCH common search space and Type2A-MPDCCH common search space for LTE-M:

[104b-e-LTE-6.1CRs-01] Email discussion/approval on R1-2102846 and R1-2102847 by April-15 - Youjun (ZTE)

# Discussion

## Issue 1: Correction on MPDCCH assignment procedure [1]

|  |  |
| --- | --- |
| ***Reason for change:*** | The value  for determining the CCEs for any PDCCH candidate of Type1A-MPDCCH common search space and Type2A-MPDCCH common search space is missing. |
|  |  |
| ***Summary of change:*** | Add the definition of  for Type1A-MPDCCH common search space and Type2A-MPDCCH common search space in the spec. |
|  |  |
| ***Consequences if not approved:*** | The CCEs for Type1A-MPDCCH common search space and Type2A-MPDCCH common search space can not be obtained. |

<Changes to TS 36.213>

**<Unchanged parts are omitted>**

### 9.1.5 MPDCCH assignment procedure

**<Unchanged parts are omitted>**

For aggregation level  or  ECCEs, the number of ECCEs refers to the MPDCCH mapping to the REs of the 2+4 PRB set as defined in [3]. An MPDCCH search space at aggregation level  and repetition level is defined by a set of MPDCCH candidates where each candidate is repeated in a set of  consecutive BL/CE downlink subframes starting with subframe . For an MPDCCH-PRB-set , the ECCEs corresponding to MPDCCH candidate *m* of the search space  are given by



where



,

is the number of MPDCCH candidates to monitor at aggregation level in MPDCCH-PRB-set  in each subframe in the set of  consecutive subframes.

for MPDCCH UE-specific search space is determined as described in Clause 9.1.4, and for Type0-MPDCCH common search space, Type1-MPDCCH common search space, Type1A-MPDCCH common search space, Type2-MPDCCH common search space and Type2A-MPDCCH common search space.

For , if subframe is a special subframe that does not support MPDCCH according to table 6.8B.1-1 in [3], the UE shall calculate  by assuming for normal cyclic prefix and for extended cyclic prefix.

**<Unchanged parts are omitted>**

Please provide your comments for the proposed CR:

|  |  |
| --- | --- |
| Companies | Comments |
| Lenovo, MotoM | We are fine with the CR |
| Ericsson | We are fine with the CR |
| QC | We are OK with the CR |
| Nokia, NSB | We are fine with the CR |
| Huawei, HiSilicon | We are fine with the change. |

## Issue 2: Correction on PDSCH dropping for multicast in special subframe [2]

|  |  |
| --- | --- |
| ***Reason for change:*** | Multicast is supported for TDD and FDD in Release 14. For frame structure type 2, MPDCCH and PDSCH transmission in the special subframe would be dropped. The PDSCH transmission by a BL/CE UE can also be scheduled from Type1A-MPDCCH common search space and Type2A-MPDCCH common search space. However, if the PDSCH is scheduled from Type1A-MPDCCH common search space or Type2A-MPDCCH common search, corresponding PDSCH dropping in the special subframe is missed in the spec. |
|  |  |
| ***Summary of change:*** | Add the description that a BL/CE UE shall assume PDSCH is dropped in a special subframe when the PDSCH is scheduled from Type1A-MPDCCH common search space or Type2A-MPDCCH common search space. |
|  |  |
| ***Consequences if not approved:*** | The PDSCH transmission behavior, when PDSCH is scheduled from Type1A-MPDCCH common search space and Type2A-MPDCCH common search space in special subframe, is not consistent with that scheduled from other search spaces. |

<Changes to TS 36.213>

### 7.1.7 Modulation order and transport block size determination

**<Unchanged parts are omitted>**

For frame structure type 2, a BL/CE UE shall assume PDSCH is dropped in a special subframe considered as BL/CE DL subframe according to Clause 6.8B.1 of [3] in the following cases

- for PDSCH scheduled from UE-specific search space, Type0-MPDCCH common search space, Type1-MPDCCH common search space, Type1A-MPDCCH common search space, Type2-MPDCCH common search space or Type2A-MPDCCH common search space, if an MPDCCH belonging to the corresponding search space is dropped in the special subframe according to clause 9.1.5.

- if PDSCH carries SI messages.

**<Unchanged parts are omitted>**

Please provide your comments for the proposed CR:

|  |  |
| --- | --- |
| Companies | Comments |
| Lenovo, MotoM | We are fine with the CR |
| Ericsson | We are fine with the CR |
| QC | We are OK with the CR |
| Nokia, NSB | We are fine with the CR |
| Huawei, HiSilicon | We are fine with the change. |

# Summary

# References

1. R1-2102846 Correction on MPDCCH assignment procedure ZTE,Sanechips
2. R1-2102847 Correction on PDSCH dropping for multicast in special subframe ZTE,Sanechips