**3GPP TSG RAN WG1 #117 R1-2405378**

**Fukuoka City, Fukuoka, Japan, May 20th – 24th, 2024**

Source: Moderator (CMCC)

Title: FL summary on MCS table for multicast PDSCH in RRC\_INACTIVE mode

Agenda item: 8.1

Document for: Discussion & Decision

# Introduction

This summary is about maintenance of R18 MBS about MCS table for multicast PDSCH in RRC\_INACTIVE mode[1].

# Discussion

**Reason for change**

The *mcs-Table* of multicast PDSCH in RRC\_INACTIVE can be set to qam256 or qam64LowSE according to the endorsed CR of TS 38.331 [2]. However only the case when *mcs-Table* set to qam256 is described in the current TS 38.214 but the case *mcs-Table* set to qam64LowSE is missed.

– *PDSCH-ConfigBroadcast*

The IE *PDSCH-ConfigBroadcast* is used to configure parameters for acquiring the PDSCH for MCCH and MTCH.

***PDSCH-ConfigBroadcast* information element**

-- ASN1START

-- TAG-PDSCH-CONFIGBROADCAST-START

PDSCH-ConfigBroadcast-r17 ::= SEQUENCE {

 pdschConfigList-r17 SEQUENCE (SIZE (1..maxNrofPDSCH-ConfigPTM-r17) ) OF PDSCH-ConfigPTM-r17,

 pdsch-TimeDomainAllocationList-r17 PDSCH-TimeDomainResourceAllocationList-r16 OPTIONAL, -- Need R

 rateMatchPatternToAddModList-r17 SEQUENCE (SIZE (1..maxNrofRateMatchPatterns)) OF RateMatchPattern OPTIONAL, -- Need R

 lte-CRS-ToMatchAround-r17 RateMatchPatternLTE-CRS OPTIONAL, -- Need R

 mcs-Table-r17 ENUMERATED {qam256, qam64LowSE} OPTIONAL, -- Need S

 xOverhead-r17 ENUMERATED {xOh6, xOh12, xOh18} OPTIONAL -- Need S

}

PDSCH-ConfigPTM-r17 ::= SEQUENCE {

 dataScramblingIdentityPDSCH-r17 INTEGER (0..1023) OPTIONAL, -- Need S

 dmrs-ScramblingID0-r17 INTEGER (0..65535) OPTIONAL, -- Need S

 pdsch-AggregationFactor-r17 ENUMERATED {n2, n4, n8} OPTIONAL -- Need S

}

-- TAG-PDSCH-CONFIGBROADCAST-STOP

-- ASN1STOP

|  |
| --- |
| ***PDSCH-ConfigBroadcast* field descriptions** |
| ***lte-CRS-ToMatchAround***Parameters to determine an LTE CRS pattern that the UE shall rate match around. |
| ***pdschConfigList***List of PDSCH parameters which can be configured per G-RNTI. Only one entry is allowed to be configured if included in *SIB20* or *SIB24*. |
| ***pdsch-TimeDomainAllocationList***List of time-domain configurations for timing of DL assignment to DL data.The field *pdsch-TimeDomainAllocationList* applies to DCI format 4\_0 (see table 5.1.2.1.1-1 in TS 38.214 [19]). When the field is absent, the UE follows PDSCH time domain resource allocation determination rule as specified in TS 38.214 [19], clause 5.1.2.1.1. |
| ***rateMatchPatternToAddModList***Resources patterns which the UE should rate match PDSCH around. The UE rate matches around the union of all resources indicated in the rate match patterns (see TS 38.214 [19], clause 5.1.4.1). |
| ***mcs-Table***Indicates which MCS table the UE shall use for PDSCH. If the field is absent the UE applies the value 64QAM. The field *mcs-Table* applies to DCI format 4\_0 with CRC scrambled by MCCH-RNTI/G-RNTI for MBS broadcast or by Multicast MCCH-RNTI for MBS multicast in RRC\_INACTIVE (see TS 38.214 [19], clause 5.1.3.1). |
| ***xOverhead***Accounts for an overhead from CSI-RS, CORESET, etc. If the field is absent, the UE applies value xOh0 (see TS 38.214 [19], clause 5.1.3.2). |

**Proposed TP on TS 38.214**

#### **5.1.3.1 Modulation order and target code rate determination**

For the PDSCH scheduled by a PDCCH with DCI format 1\_0, format 1\_1, format 1\_2, format 1\_3, format 4\_0, format 4\_1 or format 4\_2 with CRC scrambled by C-RNTI, MCS-C-RNTI, TC-RNTI, CS-RNTI, SI-RNTI, RA-RNTI, MSGB-RNTI, G-RNTI, G-CS-RNTI, multicast-MCCH-RNTI, MCCH-RNTI or P-RNTI, or for the PDSCH scheduled without corresponding PDCCH transmissions using the higher-layer-provided PDSCH configuration *SPS-Config*,

< Unchanged parts are omitted >

elseif the higher layer parameter *mcs-Table* given by *pdsch-ConfigMulticast* is set to 'qam256', and the PDSCH is scheduled by a PDCCH with DCI format 4\_1 or 4\_2 with CRC scrambled by G-RNTI for multicast

- the UE shall use *IMCS* and Table 5.1.3.1-2 to determine the modulation order (*Qm*) and Target code rate (*R*) used in the physical downlink shared channel.

elseif the higher layer parameter *mcs-Table* given by *pdsch-ConfigMCCH and pdsch-ConfigMTCH* for MBS boardcast is set to 'qam256', and the PDSCH is scheduled by a PDCCH with DCI format 4\_0 with CRC scrambled by MCCH-RNTI or G-RNTI for broadcast

- the UE shall use *IMCS* and Table 5.1.3.1-2 to determine the modulation order (*Qm*) and Target code rate (*R*) used in the physical downlink shared channel.

elseif the higher layer parameter *mcs-Table* given by *pdsch-ConfigMCCH and pdsch-ConfigMTCH* for MBS multicast is set to ‘qam256’, and the PDSCH is scheduled by a PDCCH with DCI format 4\_0 with CRC scrambled by multicast-MCCH-RNTI or by a PDCCH with DCI format 4\_1 with CRC scrambled by G-RNTI for multicast in RRC\_INACTIVE

- the UE shall use *IMCS* and Table 5.1.3.1-2 to determine the modulation order (*Qm*) and Target code rate I used in the physical downlink shared channel.

elseif the higher layer parameter *mcs-Table* given by *pdsch-ConfigMulticast* is set to 'qam64LowSE', and the PDSCH is scheduled by a PDCCH with DCI format 4\_1 or 4\_2 with CRC scrambled by G-RNTI for multicast

- the UE shall use *IMCS* and Table 5.1.3.1-3 to determine the modulation order (*Qm*) and Target code rate (*R*) used in the physical downlink shared channel.

elseif the higher layer parameter *mcs-Table* given by *pdsch-ConfigMCCH and pdsch-ConfigMTCH* for MBS multicast is set to ‘qam64LowSE’, and the PDSCH is scheduled by a PDCCH with DCI format 4\_0 with CRC scrambled by multicast-MCCH-RNTI or by a PDCCH with DCI format 4\_1 with CRC scrambled by G-RNTI for multicast in RRC\_INACTIVE

- the UE shall use *IMCS* and Table 5.1.3.1-3 to determine the modulation order (*Qm*) and Target code rate (*R*) used in the physical downlink shared channel.

< Unchanged parts are omitted >

**Discussion**

Companies provide your views in the following table:

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| --- | --- |
| **Company** | **Comments** |
| CATT | We think the CR is needed. OK with the current version. |
| Nokia | Support the CR |
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**Summary**

# Proposals

# References

1. R1-2405014 Draft CR on MCS table for multicast PDSCH in RRC\_INACTIVE mode CMCC
2. R2-2404019 MBS Rapporteur CR for RRC Huawei, HiSilicon, CATT, Samsung, LG Electronics Inc., CMCC, Xiaomi