3GPP TSG-RAN WG1 Meeting #102-e R1- 20xxxxx

e-Meeting, August 17th – 28th, 2020

Agenda Item: 6.2.1

Source: Moderator (Ericsson)

Title: FL summary #1 for Resource reservation field in SPS release DCI in
LTE-MTC and NB-IoT

Document for: Discussion, Decision

# Introduction

This document provides a summary of the following RAN1 email discussion.

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| * [102-e-LTE-eMTC5-05] Resource reservation field in SPS release DCI – Johan (Ericsson)
	+ Resource reservation field in SPS release DCI ([R1-2005503](https://protect2.fireeye.com/v1/url?k=7f84c4d0-2257985f-7f854f9f-0cc47a31ce52-792e6c310bc6508c&q=1&e=35232f27-e789-49d1-b99b-5a16147b2dfd&u=http%3A%2F%2Fwww.3gpp.org%2Fftp%2FTSG_RAN%2FWG1_RL1%2FTSGR1_102-e%2FDocs%2FR1-2005503.zip) proposal 1)
	+ Common email discussion for LTE-MTC ([R1-2005503](https://protect2.fireeye.com/v1/url?k=9e9e784e-c34d24c1-9e9ff301-0cc47a31ce52-b271fcedb11a8aad&q=1&e=35232f27-e789-49d1-b99b-5a16147b2dfd&u=http%3A%2F%2Fwww.3gpp.org%2Fftp%2FTSG_RAN%2FWG1_RL1%2FTSGR1_102-e%2FDocs%2FR1-2005503.zip)) and NB-IoT ([R1-2005504](https://protect2.fireeye.com/v1/url?k=9e7620df-c3a57c50-9e77ab90-0cc47a31ce52-738fc6e3a4f8f024&q=1&e=35232f27-e789-49d1-b99b-5a16147b2dfd&u=http%3A%2F%2Fwww.3gpp.org%2Fftp%2FTSG_RAN%2FWG1_RL1%2FTSGR1_102-e%2FDocs%2FR1-2005504.zip))
	+ Discussions/Agreements by 8/19, TPs by 8/24
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# Issue #1: LTE-MTC case

Contribution [1] proposes that if the Rel-16 LTE-MTC resource reservation feature is configured, then the ‘Resource reservation’ field in a DCI for SPS release is set to a default value for SPS release MPDCCH validation. The following TP for 36.213 is provided.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 9.2 PDCCH/EPDCCH/MPDCCH/SPDCCH validation for semi-persistent scheduling**<Unchanged parts are omitted>****Table 9.2-1C: Special fields for Semi-Persistent Scheduling Release MPDCCH Validation**

|  |  |  |
| --- | --- | --- |
|  | **DCI format 6-0A** | **DCI format 6-1A** |
| **HARQ process number** | set to '000' | FDD: set to '000'TDD: set to '0000 |
| **Redundancy version** | set to '00' | set to '00' |
| **Repetition number** | set to '00' | set to '00' |
| **Modulation and coding scheme** | set to '1111' | set to '1111' |
| **TPC command for scheduled PUSCH** | set to '00' | N/A |
| **Resource block assignment** | Set to all '1's | Set to all '1's |
| **Resource reservation** | Set to ‘1’ if present | Set to ‘1’ if present |

**<Unchanged parts are omitted>** |

Companies are invited to provide their comments on the text proposal.

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| **Company** | **Comments** |
| Qualcomm | We do not think this is essential – there are many other fields (including optional fields) in 6-0A and 6-1A that are just ignored for validation. Actually, this would be the first optional field in DCI used for validation. Just checking 6-0A, the following fields are ignored:- SRS request- Modulation order override.-DAI- UL indexGiven that this is a single bit, the gain is very small in false alarm. Having said this, if there is a clear majority that want to add this bit to validation, we will not object. |
| Lenovo&MotoM | Not an essential issue. Hope to keep the legacy validation |
| Nokia | We do not see this as being essential, but we will not oppose if there is a clear majority. |
| Ericsson | It does not seem like an essential correction. |
| ZTE | We respect majority view if companies think it is not an essential issue. Then, the Resource reservation field in DCI for SPS release is ignored by the UE. |
| LG | Not essential. The performance improvement would be marginal. |
| Huawei, HiSilicon | It seems not essential, considering not all the unused fields are used for validation. |
|  |  |

# Issue #2: NB-IoT case

Contribution [2] proposes that if the Rel-16 NB-IoT resource reservation feature is configured, then the ‘Resource reservation’ field in a DCI for SPS release is set to a default value for SPS release NPDCCH validation. The following TP for 36.213 is provided.

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| 16.6.3 NPDCCH validation for semi-persistent scheduling**<Unchanged parts are omitted>**A UE shall validate a Semi-Persistent Scheduling assignment NPDCCH only if all the following conditions are met: - the CRC parity bits obtained for the NPDCCH payload are scrambled with the Semi-Persistent Scheduling C-RNTI- the new data indicator field is set to '0'. Validation is achieved if all the fields for the used DCI format N0 are set according to Table 16.6.3-1 or Table 16.6.3-2.If validation is achieved, the UE shall consider the received DCI information accordingly as a valid semi-persistent activation or release. If validation is not achieved, the received DCI format shall be considered by the UE as having been received with a non-matching CRC.**Table 16.6.3-1: Special fields for Semi-Persistent Scheduling Activation NPDCCH Validation**

|  |  |
| --- | --- |
|  | **DCI format N0** |
| **HARQ process number (present if UE is configured with 2 uplink HARQ processes)** | set to '0' |
| **Redundancy version** | set to '0' |
| **Modulation and coding scheme** | set to '0000' |
| **Resource assignment** | set to '000' |

**Table 16.6.3-2: Special fields for Semi-Persistent Scheduling Release NPDCCH Validation**

|  |  |
| --- | --- |
|  | **DCI format N0** |
| **HARQ process number (present if UE is configured with 2 uplink HARQ processes)** | set to '0' |
| **Redundancy version** | set to '0' |
| **Repetition number** | set to '000' |
| **Modulation and coding scheme** | set to '1111' |
| **Subcarrier indication** | Set to all '1's |
| **Resource reservation (present if UE is configured with higher layer parameter *ul-ResourceReservationConfig)*** | Set to ‘1’ |

**<Unchanged parts are omitted>** |

Companies are invited to provide their comments on the text proposal.

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| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Similar view as issue #1. |
| Nokia  | We do not see this as being essential. |
| Ericsson | It does not seem like an essential correction. |
| ZTE | We respect majority view if companies think it is not an essential issue. Then, the Resource reservation field in DCI for SPS release is ignored by the UE. |
| LG | Not essential. The performance improvement would be marginal. |
| Huawei, HiSilicon | It seems not essential, considering not all the unused fields are used for validation. |
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# References

1. [R1-2005503](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_102-e/Docs/R1-2005503.zip), “Clarification on Resource reservation filed in LTE-MTC SPS Release DCI”, ZTE

1. [R1-2005504](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_102-e/Docs/R1-2005504.zip), “Clarification on Resource reservation filed in NB-IoT SPS Release DCI”, ZTE