**3GPP TSG RAN WG1 Meeting #102-e R1-200xxxx**

**E-Meeting, August 17 – 28, 2020**

**Agenda Item: 6.2.2**

**Source: Moderator (Huawei)**

**Title: Text proposal on terms and higher layer parameters for NB-IoT**

**Document for: Discussion and Decision**

# Introduction

This document provides the text proposal as outcomes of the following email discussion [1]:

[102-e-LTE-NB\_IoTenh3-03] NB-IoT alignment with higher layer parameters and terms

* Issue #6: misalignment of terms and higher layer parameters names
* Issue #7: misalignment of configuration of multiTB-Gap
* Issue#8: PUR RNTI
* Issue #9: several editorial (typos)
* Discussions/Agreement by 8/21, TPs by 8/28

# Discussion

## TP on terms and higher layer parameters for NB-IoT

**Reason for changes:**

Some higher layer parameters for NB-IoT are not aligned with TS 36.331.

The field for multi-TB scheduling is named as Number of scheduled TB for Unicast, while in 36.213, the number of scheduled TB field is used.

**Summary of changes:**

The higher layer parameter names for NB-IoT are aligned with TS 36.331.

The term of the field for multi-TB scheduling in 36.213 is aligned with TS 36.212.

**Specs/sections impacted:**

**Consequences if not approved:**

There may be ambiguity when referring to the higher layer parameters, or referring to the field for multi-TB scheduling.

---------------------------------------------- Start of Text Proposal to 36.213 ------------------------------

16.4 Narrowband physical downlink shared channel related procedures

<Unchanged parts omitted>

A NB-IoT UE shall determine whether a downlink subframe or a TDD special subframe configured for NB-IoT DL transmission is a NB-IoT DL subframe as follows

- If the UE determines that the subframe contains NPSS/NSSS/NPBCH/ *SystemInformationBlockType1-NB* transmission, then the subframe is not assumed as a NB-IoT subframe.

- Else if higher layer parameter *resourceReservationConfigDL* is configured

<Unchanged parts omitted>

**16.4.1 UE procedure for receiving the narrowband physical downlink shared channel**

<Unchanged parts omitted>

- , where the value of  is determined by the repetition number field in the corresponding DCI (see Subclause 16.4.1.3), the value of is determined by the resource assignment field in the corresponding DCI (see Subclause 16.4.1.3), and the value of is determined by the Number of scheduled TB for Unicast field, if present, in the corresponding DCI,  otherwise,

<Unchanged parts omitted>

**16.4.2 UE procedure for reporting ACK/NACK**

<Unchanged parts omitted>

- if the UE is configured with higher layer parameter *harq-ACK-Bundling* in *npdsch-MultiTB-Config*, then , otherwise , where the value of is determined by the Number of scheduled TB for Unicast field if present in the NPDCCH corresponding to the NPDSCH, otherwise ,

<Unchanged parts omitted>

16.4.2 UE procedure for reporting ACK/NACK

<Unchanged parts omitted>

- For 

- if the UE is configured with higher layer parameter *harq-AckBundling* in *npdsch-MultiTB-Config*, and the NPDSCH corresponding to a NPDCCH with DCI CRC scrambled by C-RNTI,

<Unchanged parts omitted>

16.5 Narrowband physical uplink shared channel related procedures

<Unchanged parts omitted>

A NB-IoT UE shall determine whether a subframe is a NB-IoT UL subframe as follows

- If higher layer parameter *resourceReservationConfigUL* is configured

<Unchanged parts omitted>

### 16.5.1 UE procedure for transmitting format 1 narrowband physical uplink shared channel

<Unchanged parts omitted>

- , where the value of is determined by the repetition number field in the corresponding DCI (see Subclause 16.5.1.1), the value of is determined by the resource assignment field in the corresponding DCI (see Subclause 16.5.1.1), the value of  is the number of NB-IoT UL slots of the resource unit (defined in clause 10.1.2.3 of [3]) corresponding to the  allocated number of subcarriers (as determined in Subclause 16.5.1.1) in the corresponding DCI, and the value of is determined by the Number of scheduled TB for Unicast field, if present, in the corresponding DCI,  otherwise

<Unchanged parts omitted>

**16.6 Narrowband physical downlink control channel related procedures**

<Unchanged parts omitted>

- if the corresponding NPDCCH with DCI format N0 with CRC scrambled by C-RNTI schedules two transport blocks as determined by the Number of scheduled TB for Unicast field if present, the UE is not required to monitor an NPDCCH candidate in any subframe starting from subframe *n+1* to subframe *n+k-1,* otherwise the UE is not required to monitor an NPDCCH candidate in any subframe starting from subframe *n+k-2* to subframe *n+k-1*; and

<Unchanged parts omitted>

- if the corresponding NPDCCH with DCI format N1 with CRC scrambled by C-RNTI schedules two transport blocks as determined by the Number of scheduled TB for Unicast field if present, the UE is not required to monitor an NPDCCH candidate in any subframe starting from subframe *n+1* to subframe *n+k-1*;

- otherwise, the UE is not required to monitor an NPDCCH candidate in any subframe starting from subframe *n+k-2* to subframe *n+k-1*;

----------------------------------------------- End of Text Proposal to 36.213 ------------------------------

---------------------------------------------- Start of Text Proposal to 36.212 ------------------------------

6.4.3.1 DCI Format N0

<Unchanged parts omitted>

- Resource reservation – 1 bit as defined in clause 16.5 of [3]. This field is only present if higher layer parameter *resourceReservationConfigUL* is configured and the DCI is mapped onto the UE-specific search space given by C-RNTI as defined in [3].

<Unchanged parts omitted>

6.4.3.2 DCI Format N1

<Unchanged parts omitted>

- Resource reservation – 1 bit as defined in clause 16.4 of [3]. This field is only present if higher layer parameter *resourceReservationConfigDL* is configured and the DCI is mapped onto the UE-specific search space given by C-RNTI as defined in [3].

----------------------------------------------- End of Text Proposal to 36.212 ------------------------------

---------------------------------------------- Start of Text Proposal to 36.211 ------------------------------

10.1.3.6 Mapping to physical resources

<Unchanged parts omitted>

If higher layer parameter *resourceReservationConfigUL* is configured, then in case of NPUSCH format 1 transmission associated with C-RNTI or SPS C-RNTI using UE-specific NPDCCH search space with the Resource reservation field in the DCI set to 1 including NPUSCH format 1 transmission without a corresponding NPDCCH, or in case of NPUSCH format 2 transmission associated with C-RNTI using UE-specific NPDCCH search space,

<Unchanged parts omitted>

10.1.4.2 Mapping to physical resources

<Unchanged parts omitted>

If higher layer parameter *resourceReservationConfigUL* is configured, then in case of NPUSCH format 1 transmission associated with C-RNTI or SPS C-RNTI using UE-specific NPDCCH search space and the Resource reservation field in the DCI is set to 1 including NPUSCH format 1 transmission without a corresponding NPDCCH, or in case of NPUSCH format 2 transmission associated with C-RNTI using UE-specific NPDCCH search space,

<Unchanged parts omitted>

10.2.3.4 Mapping to resource elements

<Unchanged parts omitted>

If higher layer parameter *resourceReservationConfigDL* is configured, then in case of NPDSCH transmission associated with C-RNTI using UE-specific NPDCCH search space with the Resource reservation field in the DCI set to 1,

<Unchanged parts omitted>

10.2.5.5 Mapping to resource elements

<Unchanged parts omitted>

If higher layer parameter *resourceReservationConfigDL* is configured, then in case of NPDCCH transmission associated with C-RNTI or SPS C-RNTI using UE-specific NPDCCH search space,

<Unchanged parts omitted>

----------------------------------------------- End of Text Proposal to 36.211 ------------------------------

# References

1. R1-2007270 Feature summary on [102-e-LTE-NB\_IoTenh3-03] Moderator (Huawei)