3GPP TSG-RAN WG1 Meeting #103-e R1-20xxxxx

e-Meeting, October 26th – November 13th, 2020

Agenda Item: 6.2.1

Source: Moderator (Ericsson)

Title: FL summary for parameter name corrections for Rel-16 LTE-MTC

Document for: Discussion, Decision

# 1 Introduction

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

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| [103-e-LTE-eMTC5-03] Parameter name corrections – Johan (Ericsson)* Issue #1: PUR-RNTI parameter name corrections ([R1-2008583](https://protect2.fireeye.com/v1/url?k=900a4a9f-cdd85d96-900bc1d0-0cc47a31cdf8-341e9cece5cd29af&q=1&e=31cac414-d755-4f05-8fc7-d03d4bb99eda&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2Ftsg_ran%2FWG1_RL1%2FTSGR1_103-e%2FDocs%2FR1-2008583.zip))
* Issue #2: Multi-TB HARQ-ACK bundling parameter name corrections ([R1-2008692](https://protect2.fireeye.com/v1/url?k=abdb829b-f6099592-abda09d4-0cc47a31cdf8-d90f6da453b3c190&q=1&e=31cac414-d755-4f05-8fc7-d03d4bb99eda&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2Ftsg_ran%2FWG1_RL1%2FTSGR1_103-e%2FDocs%2FR1-2008692.zip))
* Issue #3: Resource reservation parameter name corrections ([R1-2008692](https://protect2.fireeye.com/v1/url?k=b5d1f129-e803e620-b5d07a66-0cc47a31cdf8-14df9912118da079&q=1&e=31cac414-d755-4f05-8fc7-d03d4bb99eda&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2Ftsg_ran%2FWG1_RL1%2FTSGR1_103-e%2FDocs%2FR1-2008692.zip))
* Other potential parameter name issues can also be brought up in the email discussion.
* Discussion and decision by 10/29, TPs by 11/5
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# 2 PUR-RNTI parameter name corrections

Contribution [1] contains TPs for replacing the parameter name “PUR C-RNTI” with “PUR-RNTI”, in line with the RAN2 specifications.

**Question: Can the 36.211/212/213 TPs on PUR-RNTI parameter name correction below be adopted?**

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| **Company** | **Comments** |
| Ericsson | Yes, but note that there may be some need for coordination of TPs/CRs for the PUR-RNTI parameter name issue and the other PUR issues discussed in email discussion [103-e-LTE-eMTC5-01]. |
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**TP for 36.211:**

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| 5.3.4 Mapping to physical resources------------------------------------------------- Text omitted ------------------------------------------ For BL/CE UE in CEModeA, - If PUSCH is transmitted using preconfigured uplink resources,- PUSCH frequency hopping is enabled when the higher layer parameter *pur-PUSCH-FreqHopping* is set, otherwise frequency hopping is disabled.- Else, if PUSCH scheduled by DCI format 6-0A is associated with PUR-RNTI,- PUSCH frequency hopping is enabled when the higher layer parameter *pur-PUSCH-FreqHopping* is set and the frequency hopping flag in DCI format 6-0A indicates frequency hopping, otherwise frequency hopping is disabled.- Else,- PUSCH frequency hopping is enabled when the higher-layer parameter *pusch-HoppingConfig* is set and the frequency hopping flag in DCI format 6-0A indicates frequency hopping, otherwise frequency hopping is disabled. - For BL/CE UE in CEModeB, - If PUSCH is transmitted using preconfigured uplink resources,- PUSCH frequency hopping is enabled when the higher layer parameter *pur-PUSCH-FreqHopping* is set, otherwise frequency hopping is disabled.- Else, if PUSCH scheduled by DCI format 6-0B is associated with PUR-RNTI,- PUSCH frequency hopping is enabled when the higher layer parameter *pur-PUSCH-FreqHopping* is set, otherwise frequency hopping is disabled.- Else,- PUSCH frequency hopping is enabled when the higher-layer parameter *pusch-HoppingConfig* is set, otherwise frequency hopping is disabled. ------------------------------------------------- Text omitted -----------------------------------------6.4.1 Physical downlink shared channel for BL/CE UEs------------------------------------------------- Text omitted -----------------------------------------For PDSCH transmission associated with PUR-RNTI to BL/CE UEs using UE-specific MPDCCH search space, frequency hopping of the PDSCH is enabled when higher layer parameter *pur-PDSCH-FreqHopping* is set.------------------------------------------------- Text omitted -----------------------------------------6.8B.5 Mapping to resource elements------------------------------------------------- Text omitted ------------------------------------------ For MPDCCH transmission associated with PUR-RNTI using UE-specific MPDCCH search space, frequency hopping of the MPDCCH is enabled when *mpdcch-FreqHopping* inhigher layer parameter *PUR-MPDCCH-Config* is set. ------------------------------------------------- Text omitted ----------------------------------------- |

**TP for 36.212:**

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| 5.3.3.1.10 Format 6-0ADCI format 6-0A is used for the scheduling of PUSCH in one UL cell, for the indication of ACK feedback, and operation on preconfigured UL resources. The following information is transmitted by means of the DCI format 6-0A:- Flag format 6-0A/format 6-1A differentiation – 1 bit, where value 0 indicates format 6-0A and value 1 indicates format 6-1A- Frequency hopping flag – 1 bit, where value 0 indicates frequency hopping is not enabled and value 1 indicates frequency hopping is enabled as defined in clause 5.3.4 of [2]. The field is not present if *ce-PUSCH-MultiTB-Config* is enabled and the DCI is mapped onto the UE-specific search space given by C-RNTI as defined in [3]. - Number of resource units – 2 bits, where value '00' indicates the format 6-0A DCI uses PRB resource allocation, otherwise the DCI format 6-0A uses sub-PRB resource allocation as defined in clause 8.1.6 of [3]. This field is present when *ce-PUSCH-SubPRB-Config* is configured by higher layers and the DCI is mapped onto the UE-specific search space given by C-RNTI as defined in [3], or when the DCI is mapped onto the UE-specific search space given by PUR-RNTI as defined in [3] and the UE is not configured with higher layer parameter *numRUs* = '00'.------------------------------------------------- Text omitted -----------------------------------------If format 6-0A CRC is scrambled by PUR-RNTI and Resource block assignment is set to all ones, the remaining fields are set as follows:------------------------------------------------- Text omitted -----------------------------------------5.3.3.1.11 Format 6-0BDCI format 6-0B is used for the scheduling of PUSCH in one UL cell, for the indication of ACK feedback, and operation on preconfigured UL resources. The following information is transmitted by means of the DCI format 6-0B:- Flag for format 6-0B/format 6-1B differentiation – 1 bit, where value 0 indicates format 6-0B and value 1 indicates format 6-1B- Flag for sub-PRB resource allocation – 1 bit, where value 1 indicates the format 6-0B DCI uses sub-PRB resource allocation and value 0 indicates the format 6-0B DCI does not use sub-PRB resource allocation. This field is present when *ce-PUSCH-SubPRB-Config* is configured by higher layers and the DCI is mapped onto the UE-specific search space given by C-RNTI as defined in [3], or when the DCI is mapped onto the UE-specific search space given by PUR-RNTI as defined in [3] and the UE is configured with higher layer parameter *subPRB-Allocation* = 'true'.- Modulation and coding scheme – 4 bits as defined in clause 8.6 of [3]. The field is only present if format 6-0B CRC is scrambled by PUR-RNTI and for not sub-PRB resource allocation.- Resource block assignment – The field is not present if format 6-0B CRC is scrambled by PUR-RNTI and Modulation and coding scheme is set to all ones for not sub-PRB resource allocation.------------------------------------------------- Text omitted -----------------------------------------If format 6-0B CRC is scrambled by PUR-RNTI and Resource block assignment is set to all ones for sub-PRB resource allocation or Modulation and coding scheme is set to all ones for not sub-PRB resource allocation, the remaining fields are set as follows:- ACK or Fallback indicator – 1 bit, where value 0 indicates ACK and value 1 indicates fallback as defined in clause 9.1.5.3 of [3]- PUSCH repetition adjustment – 3 bits as defined in clause 8.0 of [3]- Timing advance adjustment – 6 bits as defined in clause 4.2.3 of [3]. The field is only present if ACK or Fallback indicator is set to 0.- All the remaining bits in format 6-0B are set to zeroOtherwise - Modulation and coding scheme – 3 or 4 bits as defined in clause 8.6 of [3]. The 3-bit field applies when the flag for sub-PRB resource allocation is present and set to 1, otherwise the 4-bit field applies. The field is not present if *ce-PUSCH-MultiTB-Config* is enabled and the DCI is mapped onto the UE-specific search space given by C-RNTI as defined in [3], or if format 6-0B CRC is scrambled by PUR-RNTI and for not sub-PRB resource allocation. ------------------------------------------------- Text omitted ----------------------------------------- |

**TP for 36.213:**

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| 5.1.1.1 UE behaviour------------------------------------------------- Text omitted ------------------------------------------  and  if accumulation is enabled based on the parameter *Accumulation-enabled* or *accumulationEnabledsTTI* provided by higher layers or if the TPC command  is included in a PDCCH/EPDCCH with DCI format 0 or in a MPDCCH with DCI format 6-0A for serving cell  where the CRC is scrambled by the Temporary C-RNTI or PUR-RNTI------------------------------------------------- Text omitted -----------------------------------------* For serving cell  and a BL/CE UE configured with CEModeA, the UE attempts to decode a MPDCCH of DCI format 6-0A with the UE's C-RNTI or SPS C-RNTI or PUR-RNTI and a MPDCCH of DCI format 3/3A with this UE's TPC-PUSCH-RNTI in every BL/CE downlink subframe except when in DRX

------------------------------------------------- Text omitted -----------------------------------------5.1.2.1 UE behaviour------------------------------------------------- Text omitted ------------------------------------------ For a BL/CE UE configured with CEModeA, the UE attempts to decode a MPDCCH of DCI format 3/3A with the UE's TPC-PUCCH-RNTI and MPDCCH of DCI format 6-1A with the UE's C-RNTI or SPS C-RNTI or PUR-RNTI on every BL/CE downlink subframe except when in DRX.- If the UE decodes - a PDCCH with DCI format 1A/1B/1D/1/2A/2/2B/2C/2D/7-1A/1B/1C/1D/1E/1F/1G or - an EPDCCH with DCI format 1A/1B/1D/1/2A/2/2B/2C/2D or- an MPDCCH with DCI format 6-1A or- a SPDCCH with DCI format 7-1A/1B/1C/1D/1E/1F/1G for the primary cell and the corresponding detected RNTI equals the C-RNTI or SPS C-RNTI or PUR-RNTI of the UE and the TPC field in the DCI format is not used to determine the PUCCH resource as in Subclause 10.1, the UE shall use the  provided in that PDCCH/EPDCCH/MPDCCH/SPDCCH.------------------------------------------------- Text omitted -----------------------------------------7.1 UE procedure for receiving the physical downlink shared channel------------------------------------------------- Text omitted -----------------------------------------If a BL/CE UE is configured by higher layers to decode MPDCCH with CRC scrambled by the PUR-RNTI, the UE shall decode the MPDCCH and any corresponding PDSCH according to the respective combinations defined in Table 7.1-9. The scrambling initialization of PDSCH corresponding to these MPDCCHs is by PUR-RNTI.**Table 7.1-9: MPDCCH and PDSCH configured by PUR-RNTI**

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| **Transmission mode** | **DCI format** | **Search Space** | **Transmission scheme of PDSCH corresponding to MPDCCH** |
| **Mode 1** | 6-1A or 6-1B | UE specific by PUR-RNTI | Single-antenna port, port 0 (see Subclause 7.1.1) |
| **Mode 2** | 6-1A or 6-1B | UE specific by PUR-RNTI | Transmit diversity (see Subclause 7.1.2) |
| **Mode 6** | 6-1A | UE specific by PUR-RNTI | Closed-loop spatial multiplexing (see Subclause 7.1.4) using a single transmission layer |
| **Mode 9** | 6-1A | UE specific by PUR-RNTI | Single-antenna port, port 7 or 8 (see Subclause 7.1.1) |
| 6-1B | UE specific by PUR-RNTI | Single-antenna port, port 7 (see Subclause 7.1.1) |

------------------------------------------------- Text omitted -----------------------------------------8.0 UE procedure for transmitting the physical uplink shared channel------------------------------------------------- Text omitted -----------------------------------------A UE may transmit PUSCH on preconfigured uplink resources as configured by higher layers. The scrambling initialization of PUSCH transmission using preconfigured uplink resource is by PUR-RNTI.If a UE is configured by higher layers to decode MPDCCHs with the CRC scrambled by the PUR-RNTI, the UE shall decode the MPDCCH according to the combination defined in Table 8-10 and in case the indication in the DCI corresponds to the retransmission of a transport block transmitted using preconfigured uplink resource, transmit a corresponding PUSCH. The scrambling initialization of this PUSCH corresponding to these MPDCCHs and the PUSCH retransmission for the same transport block is by PUR-RNTI.**Table 8-10: MPDCCH and PUSCH configured by PUR-RNTI**

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| **Transmission** **mode** | **DCI format** | **Search Space** | **Transmission scheme of PUSCH** **corresponding to MPDCCH** |
| Mode 1 | DCI format 6-0A or 6-0B | UE specific by PUR-RNTI | Single-antenna port, port 10 (see Subclause 8.0.1) |

------------------------------------------------- Text omitted -----------------------------------------9.1.5 MPDCCH assignment procedure------------------------------------------------- Text omitted -----------------------------------------A BL/CE UE is not required to monitor Type1-MPDCCH common search space or MWUS in subframes in which the UE monitors a UE-specific MPDCCH search space given by PUR-RNTI.------------------------------------------------- Text omitted -----------------------------------------is the number of PRB-pairs configured for MPDCCH UE-specific search space. When =2+4, it is given by the higher layer parameter *numberPRB-Pairs-r13,* and when =2 or =4, it is given by the higher layer parameter *numberPRB-Pairs-r11*, except for MPDCCH candidates associated with PUR-RNTI in which case it is given by the higher layer parameter *mpdcch-PRB-Pairs-r16* in *PUR-Config*. , , ,  are determined from Table 9.1.5-3 by substituting the value of  with the value of higher layer parameter *mPDCCH-NumRepetition*, except for MPDCCH candidates associated with PUR-RNTI in which case it is given by the value of the higher layer parameter *mpdcch-NumRepetition-r16* in *PUR-Config*.------------------------------------------------- Text omitted -----------------------------------------For MPDCCH UE-specific search space given by PUR-RNTI, distributed MPDCCH transmission is used.------------------------------------------------- Text omitted -----------------------------------------For MPDCCH UE-specific search space, Type0-MPDCCH common search space, Type1A-MPDCCH common search space, Type2-MPDCCH common search space and Type2A-MPDCCH common search space locations of starting subframe  are given by where is the th consecutive BL/CE DL subframe from subframe , and , and , and , where- subframe  is a subframe satisfying the condition , where - For MPDCCH UE-specific search space and Type0-MPDCCH common search space,  is given by the higher layer parameter *mPDCCH-startSF-UESS,* except for MPDCCH candidates associated with PUR-RNTI in which case it is given by the higher layer parameter *mpdcch-startSF-UESS-r16* in *PUR-Config*, - For Type1A-MPDCCH common search space,  is given by the higher layer parameter *mpdcch-startSF-SC-MCCH*- For Type2-MPDCCH common search space,  is given by the higher layer parameter *mPDCCH-startSF-CSS-RA-r13*- For Type2A-MPDCCH common search space,  is given by the higher layer parameter *mpdcch-startSF-SC-MTCH*- is given by the higher layer parameter *mpdcch-Offset-SC-MTCH* for Type2A-MPDCCH common search space, and by the higher layer parameter *mpdcch-Offset-PUR-SS-r16* in *PUR-Config* for MPDCCH candidates associated with PUR-RNTI, and otherwise; and- is given by the higher layer parameter *mPDCCH-NumRepetition* for MPDCCH UE-specific search space and Type0-MPDCCH common search space, except for MPDCCH candidates associated with PUR-RNTI in which case it is given by the higher layer parameter *mpdcch-NumRepetition-r16* in *PUR-Config*, and *mPDCCH-NumRepetition-RA* for Type2-MPDCCH common search space, and *mpdcch-NumRepetitions-SC-MCCH* for Type1A-MPDCCH common search space, and *mpdcch-NumRepetitions-SC-MTCH* for Type2A-MPDCCH common search space and - , , , are given in Table 9.1.5-3. ------------------------------------------------- Text omitted -----------------------------------------If the UE has initiated a PUSCH transmission using preconfigured uplink resource ending in subframe *n*, the UE shall monitor the MPDCCH UE-specific search space in a search space window starting in subframe *n+4* with duration given by higher layer parameter *pur-MPDCCH-SS-window-duration*. Upon detection of a MPDCCH with DCI format 6-0A/6-0B with CRC scrambled by PUR-RNTI intended for the UE within the search space window and the corresponding DCI is for PUR ACK/fallback indication (as defined in [4]), the UE is not required to monitor the MPDCCH UE-specific search space for the remaining search space window duration.------------------------------------------------- Text omitted -----------------------------------------9.1.5.3 Preconfigured Uplink Resource ACK/fallback procedureIf a UE has initiated a PUSCH transmission using preconfigured uplink resource on a given serving cell, and upon detection of a MPDCCH with DCI format 6-0A/6-0B with CRC scrambled by PUR-RNTI intended for the UE within the PUR search space window as defined in Subclause 9.1.5, and the corresponding DCI is for PUR ACK/fallback indication (as defined in [4]), ------------------------------------------------- Text omitted ----------------------------------------- |

# 3 HARQ-ACK bundling parameter name corrections

Contribution [2] contains a TP for replacing the parameter name *harq-Bundling* with *harq-AckBundling* in line with the RAN2 specifications.

**Question: Can the 36.213 TP on HARQ-ACK bundling parameter name correction below be adopted?**

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| **Company** | **Comments** |
| Ericsson | Yes |
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**TP for 36.213:**

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| 7.3 UE procedure for reporting HARQ-ACK------------------------------------------------- Text omitted -----------------------------------------For a BL/CE UE, if the UE is configured with CEModeA, and if the UE is configured with higher layer parameter *harq-AckBundling* in *ce-PDSCH-MultiTB-Config* and multiple TB are scheduled in the corresponding DCI format 6-1A with CRC scrambled by C-RNTI,------------------------------------------------- Text omitted -----------------------------------------10.2 Uplink HARQ-ACK timing------------------------------------------------- Text omitted -----------------------------------------For FDD, if a BL/CE UE is configured with CEModeA, and if the UE is not configured with higher layer parameter *harq-AckBundling* in *ce-PDSCH-MultiTB-Config* and multiple TB are scheduled in the corresponding DCI, the BL/CE UE shall upon detection of a PDSCH intended for the UE and for which an HARQ-ACK shall be provided, transmit the HARQ-ACK response using the same  derived according to Subclause 10.1.2.1 in subframe(s) $s\_{b}+k\_{i}$with $b=0,1,\cdots N\_{TB}-1$, *i =0,1, …, N-1*, where------------------------------------------------- Text omitted -----------------------------------------For FDD, if a BL/CE UE is configured with CEModeA, and if the UE is configured with higher layer parameter *harq-AckBundling* in *ce-PDSCH-MultiTB-Config* and multiple TB are scheduled in the corresponding DCI, the BL/CE UE shall upon detection of a PDSCH intended for the UE and for which an HARQ-ACK shall be provided, transmit the HARQ-ACK response using the same  derived according to Subclause 10.1.2.1 in subframe(s) $s\_{b}+k\_{i}$with $b=0,1,\cdots \left⌈{N\_{TB}}/{M}\right⌉-1$, *i =0,1, …, N-1*, where------------------------------------------------- Text omitted ------------------------------------------ if the UE is not configured with higher layer parameter *harq-AckBundling* in *ce-PDSCH-MultiTB-Config,* $B=N\_{TB}$with bundle $b$ consisting of only$TB$$b$*.*------------------------------------------------- Text omitted ----------------------------------------- |

# 4 Resource reservation parameter name corrections

Contribution [2] proposes to replace the higher layer parameter names *resourceReservationDedicatedDL* and *resourceReservationDedicatedUL* with parameter names *resourceReservationConfigDedicatedDL* and *resourceReservationConfigDedicatedUL*, respectively, in 36.211/212/213.

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| ***resourceReservationConfigDedicatedDL***Indicates whether the DL resource reservation is enabled for the UE, e.g. for NR coexistence. If the field is set to *setup* and *resourceReservationDedicatedDL* is not included, then *resourceReservationConfigCommonDL* in *SystemInformationBlockType29* applies. |
| *resourceReservationConfigDedicatedUL*Indicates whether the UL resource reservation is enabled for the UE, e.g. for NR coexistence. If the field is set to *setup* and *resourceReservationDedicatedUL* is not included, then *resourceReservationConfigCommonUL* in *SystemInformationBlockType29* applies. |

If the proposal is agreed, corresponding TPs would need to be provided.

**Question: Should parameter names *resourceReservationDedicatedDL* and *resourceReservationDedicatedUL* be replaced with parameter names *resourceReservationConfigDedicatedDL* and *resourceReservationConfigDedicatedUL*, respectively, in 36.211/212/213?**

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| **Company** | **Comments** |
| Ericsson | Yes, and we can provide the required TPs. |
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# 5 Other potential parameter name issues

Other potential parameter name issues can also be brought up in this email discussion. They can be brought up in the table below.

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| **Company** | **Comments** |
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# References

1. [R1-2008583](https://protect2.fireeye.com/v1/url?k=900a4a9f-cdd85d96-900bc1d0-0cc47a31cdf8-341e9cece5cd29af&q=1&e=31cac414-d755-4f05-8fc7-d03d4bb99eda&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2Ftsg_ran%2FWG1_RL1%2FTSGR1_103-e%2FDocs%2FR1-2008583.zip), “PUR maintenance issues for Rel-16 LTE-MTC”, Ericsson

1. [R1-2008692](https://protect2.fireeye.com/v1/url?k=abdb829b-f6099592-abda09d4-0cc47a31cdf8-d90f6da453b3c190&q=1&e=31cac414-d755-4f05-8fc7-d03d4bb99eda&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2Ftsg_ran%2FWG1_RL1%2FTSGR1_103-e%2FDocs%2FR1-2008692.zip), “Multi-TB and resource reservation maintenance issues for Rel-16 LTE-MTC”, Ericsson