**3GPP TSG-RAN WG2 Meeting #1010-e *draft*R2-2005829**

**Online, 1st  - 12th June 2020**

**Agenda Item: 7.1.5**

**Source: Huawei, HiSilicon**

**Title: draft Report from [Offline-409] RAN1 feature list and UE capabilities issues for eMTC**

**Document for: Discussion and Decision**

# Introduction

This document discusses remaining eMTC Capabilities opens issues, based on [1]

# Discussion

In this section we collect company opinions on the proposals made in [1], except for proposal 10-2 which is covered in Offline-201.

## RAN2 open issues:

**Proposal 1:** Move the four PUR capabilities to general capabilities in the eMTC RRC correction CR.

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 2:** Change the group Wake Up Signal capabilities names in the eMTC correction CR so the names align with NB-IoT and Rel-15 capabilities names.

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 3:** Align the naming of ce mode A/B specific capabilities to align to those in Rel-15 (e.g. similar to ce-PDSCH-FlexibleStartPRB-CE-ModeA-r15)

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

## RAN1 Feature List Impact:

### PUR

**Proposal 4-1:** For eMTC, introduce a new general capability *pur-PUSCH-NB-MaxTBS-r16*, conditional to support of (*pur-CP-EPC-r16* and/or *pur-CP-5GC-r16* and/or *pur-UP-EPC-r16* and/or *pur-CP-EPC-r16)* and *ce-PUSCH-NB-MaxTBS.*

**Company views (to be completed during the meeting)**

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| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 4-2:** For eMTC, introduce a new general capability *pur-CE-ModeB-r16*, conditional to support of *pur-CP-EPC-r16* and/or *pur-CP-5GC-r16* and/or *pur-UP-EPC-r16* and/or *pur-CP-EPC-r16.*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 4-3:** For eMTC, introduce a new physical layer capability *pur-Sub-PRB-CE-ModeA-r16*, conditional to support of (*pur-CP-EPC-r16* and/or *pur-CP-5GC-r16* and/or *pur-UP-EPC-r16* and/or *pur-CP-EPC-r16)* and *ce-PUSCH-SubPRB-Allocation-r15.*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 4-4:** For eMTC, introduce a new physical layer capability *pur-Sub-PRB-CE-ModeB-r16*, conditional to support of (*pur-CP-EPC-r16* and/or *pur-CP-5GC-r16* and/or *pur-UP-EPC-r16* and/or *pur-CP-EPC-r16)* and *pur-CE-ModeB-r16* and *ce-PUSCH-SubPRB-Allocation-r15.*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 4-5:** For eMTC, introduce a new physical layer capability *pur-FrequencyHopping-r16*, conditional to support of *pur-CP-EPC-r16* and/or *pur-CP-5GC-r16* and/or *pur-UP-EPC-r16* and/or *pur-CP-EPC-r16.*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

### MultiTB scheduling

**Proposal 5-1:** For eMTC, introduce a new physical layer capability *ce-MultiTB-Interleaving-r16*, conditional to support of *ce-ModeA-PUSCH-MultiTB-r16* and/or *ce-ModeB-PUSCH-MultiTB-r16* and/or *ce-ModeA-PDSCH-MultiTB-r16* and/or *ce-ModeB-PDSCH-MultiTB-r16.*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 5-2:** For eMTC, introduce a new physical layer capability *ce-MultiTB-HARQ-Bundling-r16*, conditional to support of *ce-ModeA-PDSCH-MultiTB-r16.*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 5-3:** For eMTC, introduce a new physical layer capability *ce-MultiTB-Sub-PRB-r16*, conditional to support of (*ce-ModeA-PUSCH-MultiTB-r16* and/or *ce-ModeB-PUSCH-MultiTB-r16)* and *ce-PUSCH-SubPRB-Allocation-r15.*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 5-4:** For eMTC, introduce a new physical layer capability *ce-MultiTB-EarlyTermination-r16*, conditional to support of *ce-ModeA-PUSCH-MultiTB-r16* and/or *ce-ModeB-PUSCH-MultiTB-r16.*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 5-5:** For eMTC, introduce a new physical layer capability *ce-MultiTB-64QAM-r16*, conditional to support of *ce-ModeA-PDSCH-MultiTB-r16* and *ce-PDSCH-64QAM-r15.*

**Company views (to be completed during the meeting)**

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| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 5-6:** For eMTC, introduce a new physical layer capability *ce-MultiTB-FrequencyHopping-r16*, conditional to support of *ce-ModeA-PUSCH-MultiTB-r16* and/or *ce-ModeB-PUSCH-MultiTB-r16* and/or *ce-ModeA-PDSCH-MultiTB-r16* and/or *ce-ModeB-PDSCH-MultiTB-r16.*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 5-7:** For eMTC, introduce a new capability without radio access capability signaling for Multi-TB SC-MTCH in CE-modeB.

**Company views (to be completed during the meeting)**

|  |  |  |
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| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

### Resource reservation for NR

**Proposal 6-1:** Rename the four already defined capabilities to *ce-SubframeResourceResvUL-CE-ModeA-r16, ce-SubframeResourceResvDL-CE-ModeA-r16, ce-SubframeResourceResvDL-CE-ModeA-r16, ce-SubframeResourceResvDL-CE-ModeB-r16*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 6-2:** Introduce four new physical layer capabilities *ce-SlotSymbolResourceResvUL-CE-ModeA-r16, ce-SlotSymbolResourceResvUL-CE-ModeB-r16, ce-SlotSymbolResourceResvDL-CE-ModeA-r16, ce-SlotSymbolResourceResvDL-CE-ModeB-r16* to support of slot/symbol level granularity.

**Company views (to be completed during the meeting)**

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| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

### MPDCCH Performance Improvement

**Proposal 7-1:** Rename existing capability to *ce-CRS-ChannelEstMPDCCH-CE-ModeA-r16*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 7-2:** Introduce a new physical layer capability *ce-CRS-ChannelEstMPDCCH-CE-ModeB-r16*

**Company views (to be completed during the meeting)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 7-3:** Introduce a new physical layer capability *ce-CRS-ChannelEstMPDCCH-CSI-CE-ModeB-r16* conditional to support of *ce-CRS-ChannelEstMPDCCH-CE-ModeA-r16*

**Company views (to be completed during the meeting)**

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| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 7-4:** Introduce a new physical layer capability *ce-CRS-ChannelEstMPDCCH-reciprocity-TDD-r16* conditional to support of *ce-CRS-ChannelEstMPDCCH-CE-ModeA-r16* and/or *ce-CRS-ChannelEstMPDCCH-CE-ModeB-r16*

**Company views (to be completed during the meeting)**

|  |  |  |
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| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

### CSI-RS Feedback

**Proposal 8-1:** Introduce a new physical layer capability *ce-ModeA-CodebookRestriction-CSI-RS-Feedback-r16* conditional to support of *ce-ModeA-CSI-RS-Feedback-r16*

**Company views (to be completed during the meeting)**

|  |  |  |
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| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

### LTE Control Channel use

**Proposal 9-1:** Rename existing capability to *ce-MPDCCH-RxInLTE-ControlRegion-CE-ModeA-r16*

**Company views (to be completed during the meeting)**

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| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

**Proposal 9-2:** Introduce 3 new capabilities *ce-MPDCCH-RxInLTE-ControlRegion-CE-ModeB-r16, ce-MPDSCH-RxInLTE-ControlRegion-CE-ModeA-r16, ce-MPDSCH-RxInLTE-ControlRegion-CE-ModeB-r16*

**Company views (to be completed during the meeting)**

|  |  |  |
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| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

### Other

**Proposal 10-1:** Introduce UE-EUTRA-CapabilityAddXDD-Mode container for all of the newly introduced Release-16 physical layer capabilities.

**Company views (to be completed during the meeting)**

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| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments (including whether there is anything missing from the list)** |
|  | yes/no |  |

# 3 Conclusion

In this document, we have discussed miscellaneous WI open issues and made the following proposals:

[To be completed after offline]

# 4 References

1. [R2-2005085](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005085.zip) “RAN1 feature list and UE capabilities issues for eMTC”, Huawei, HiSilicon