3GPP TSG-RAN WG1 Meeting #102-e Tdoc R1-2007482

e-Meeting, August 17th – 28th, 2020

**Agenda Item: 8.6**

**Title: FL summary on initial collection of RedCap evaluation results**

**Source: Moderator (Ericsson, Apple, Qualcomm)**

**Document for: Discussion, Decision**

# 1 Introduction

This FL summary captures Phase 2 of the following RAN1#102-e post-meeting email discussion.

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| [102-e-Post-NR-RedCap-01] Email discussion/approval – Johan (Ericsson)/Hong (Apple)/Chao (Qualcomm)  Phase 1 (9/10-9/29): template for evaluations, including:   * Cost reduction estimates * Power saving estimates * Coverage recovery and capacity impact simulation results   Phase 2 (9/30-10/21)   * Initial collection of the above evaluation results |

Phase 1 of the above email discussion is documented in [R1-2007476](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_102-e/Docs/R1-2007476.zip), [R1-2007477](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_102-e/Docs/R1-2007477.zip), [R1-2007478](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_102-e/Docs/R1-2007478.zip) and [R1-2007481](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_102-e/Docs/R1-2007481.zip), where the two last ones ([R1-2007478](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_102-e/Docs/R1-2007478.zip), [R1-2007481](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_102-e/Docs/R1-2007481.zip)) provided guidance for how to fill out the templates.

The collection of evaluation results continues in RAN#103-e email discussion [103-e-NR-RedCap-EvaluationResults].

# 2 Cost reduction evaluation

Companies have provided evaluation results in the attached spreadsheet ***RedCapCost-v020.xlsx***.

Any additional comments are provided below.

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| **Company** | **Comments on cost reduction evaluation** |
| FL (Ericsson) | The FL recommendation from Phase 1 of this email discussion was to evaluate cost reduction from reduced number of antennas and reduced number of layers independently. This means that when e.g. the cost reduction from reducing the number of antennas to 1 is evaluated, the baseband part should be assumed to still support multiple layers. The motivation is in the FL summaries from Phase 1.  However, the cost evaluation from at least one source (Samsung) was made under the assumption that the cost estimate for reduced number of Rx antennas should include cost reduction from a corresponding reduction of the maximum supported number of DL MIMO layers. In the continued collection and interpretation of cost evaluation results, this aspect will be more clearly communicated to avoid this type of misunderstandings. |
| SONY | Note that in the spreadsheet (v017), our results for bandwidth reduction considered that bandwidth reduction and reduction of TBS were separate issues. If the TBS reduces in line with the bandwidth, the LDPC decoding and HARQ buffer requirements would become 2% / 2.8% respectively for FR1 FDD and 1.8% / 2.4% for FR1 TDD |

# 3 Power saving evaluation

Companies have provided evaluation results in the attached spreadsheet ***RedCapPower-v015.xlsx***.

Any additional comments are provided below.

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| **Company** | **Comments on power saving evaluation** |
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# 4 Coverage recovery evaluation

Companies have provided evaluation results in the following attached spreadsheets:

* ***RedCapCoverage-700MHz-v017.xlsx*** (700 MHz)
* ***RedCapCoverage-2.6GHz-v018.xlsx*** (2.6 GHz)
* ***RedCapCoverage-4GHz-v014.xlsx*** (4 GHz)
* ***RedCapCoverage-28GHz-v010.xlsx*** (28 GHz)

Any additional comments are provided below.

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| **Company** | **Comments on coverage recovery evaluation** |
| FL (Qualcomm) | In the spreadsheet for 4 GHz, the indicated carrier frequency on row 8 on the first two tabs and on row 3 on the other tabs was corrected from 2.6 GHz to 4 GHz. |

# 5 Capacity impact evaluation

Companies have provided evaluation results in the attached spreadsheet ***RedCapCapacity-v003.xlsx***.

Any additional comments are provided below.

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| **Company** | **Comments on capacity impact evaluation** |
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