3GPP TSG-RAN WG2 Meeting #112-e [R2-200xxxx](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-200xxxx.zip)

Elbonia, 2 – 13 November 2020

**Agenda item: 6.15**

**Source: Nokia (discussion moderator)**

**Title: Summary of [AT112-e][022][R4 NR16] MPE (Nokia)**

**Document for: Discussion and Decision**

# 1 Brief scope of the contributions

This document contains the summary of documents from agenda item 6.15 (“NR Other R4 WIs”) as per below excerpt from the session chair minutes:

* [AT112-e][022][R4 NR16] MPE (Nokia)

Treat [R2-2009690](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009690.zip), [R2-2008910](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2008910.zip), [R2-2009164](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009164.zip), [R2-2009906](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009906.zip), [R2-2010289](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010289.zip), [R2-2009166](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009166.zip), [R2-2010515](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010515.zip), [R2-2009165](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009165.zip), [R2-2010516](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip)

Intended outcome: Intermediate: Determine agreeable parts. Final: For agreeable parts, agreed CRs.

Deadline: Intermediate deadline(s) by Rapporteur, Final: Discussion stop at Wed Nov 11, 1200 UTC

The contributions belonging to this discussion are listed below.

|  |
| --- |
| **MPE**  *MAC*  [R2-2009690](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009690.zip) Miscellaneous correction on MPE reporting to 38.321 LG Electronics Inc., Ericsson, Apple CR Rel-16 38.321 16.2.1 0936 - F NR\_RF\_FR2\_req\_enh  [R2-2008910](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2008910.zip) Correction of MPE reporting field name Lenovo, Motorola Mobility CR Rel-16 38.321 16.2.1 0900 - F NR\_RF\_FR2\_req\_enh  [R2-2009164](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009164.zip) Corrections to MPE reporting Nokia, Nokia Shanghai Bell CR Rel-16 38.321 16.2.1 0909 - F NR\_RF\_FR2\_req\_enh  *MAC - relative threshold trigger*  [R2-2009906](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009906.zip) 38.321 Correction on MPE reporting triggered by the relative threshold ZTE Corporation, Sanechips CR Rel-16 38.321 16.2.1 0949 - F NR\_RF\_FR2\_req\_enh  [R2-2010289](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010289.zip) 38.331 Correction on relative threshold for MPE configuration ZTE Corporation, Sanechips CR Rel-16 38.331 16.2.0 2200 - F NR\_RF\_FR2\_req\_enh  *Stage 2*  [R2-2009166](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009166.zip) Stage-2 description of MPE reporting Nokia (Rapporteur) CR Rel-16 38.300 16.3.0 0299 - F NR\_RF\_FR2\_req\_enh  [R2-2010515](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010515.zip) Introduction of MPE reporting Ericsson CR Rel-16 38.300 16.3.0 0319 - F NR\_RF\_FR2\_req\_enh  [R2-2010981](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010981.zip) Stage-2 description of MPE reporting Nokia (Rapporteur), Ericsson CR Rel-16 38.300 16.3.0 0299 1 F NR\_RF\_FR2\_req\_enh Late  *Dual Connectivity and Handover*  [R2-2009165](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009165.zip) Corrections to inter-node signalling for MPE reporting Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.2.0 2037 - F NR\_RF\_FR2\_req\_enh  [R2-2010516](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip) MPE for EN-DC, NE-DC, NR-DC and DAPS Ericsson discussion |

These are divided into four main categories: General MAC corrections, relative reporting corrections, Stage-2 description and MPE for DC/HO. Each of these will be handled separately in the next chapter.

# 2 MPE discussion topics

## 2.1 General MAC corrections

The general MAC corrections have both overlap and separate topics, making it difficult to categorize the changes exactly. It seems sensible to first attempt to see which changes are agreeable, and then attempt to merge all these changes to a consolidated CRs. As a first step, the discussion will attempt to collect issues with each of the proposed CRs to see which parts could be generally agreeable.

**Question 1a: Do you agree with the content of the** [**R2-2009690**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009690.zip)**?**

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| **Contribution:** [**R2-2009690**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009690.zip) *Miscellaneous correction on MPE reporting to 38.321 LG Electronics Inc., Ericsson, Apple CR Rel-16 38.321 16.2.1 0936 - F NR\_RF\_FR2\_req\_enh* | | |
| **Company** | **Agree (Yes/No/Partly)** | **Comments** |
| Ericsson | Yes |  |
| Qualcomm | Agree partly | * Some of the changes are purely editorial and unnecessary (they don’t improve the text in any way); * “cancel triggered MPE P-MPR reporting” should not be removed, because an earlier change, “in which case the PHR is referred below to as 'MPE P-MPR report'”, has already separated P-MPR reporting from legacy PHR, so that “cancel all triggered PHR” does not include P-MPR report. In other words, at least in the procedural text, we can keep only one between these two changes. |
| ZTE | - | We need to clarify the MPE reporting is just one part of PHR procedure or an independent procedure with reusing the PRH MAC CE format since the independent paragraph of triggering MPE reporting really confused us, If the former understanding is correct, this CR can be agreed and hence the independent MPE reporting paragraph shall be removed as it is in the CR. If the latter understanding is correct, this CR is not correct and the description of MPE reporting in PHR triggered part shall be removed. |
| LG | Yes |  |
|  |  |  |

**Table 1. Company comments to** [**R2-2009690**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009690.zip)

**Intermediate conclusions to Q1a: TBA**

**Question 1b: Do you agree with the content of the** [**R2-2009164**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009164.zip)**?**

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| **Contribution:** [**R2-2009164**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009164.zip) *Corrections to MPE reporting Nokia, Nokia Shanghai Bell CR Rel-16 38.321 16.2.1 0909 - F NR\_RF\_FR2\_req\_enh* | | |
| **Company** | **Agree (Yes/No/Partly)** | **Comments** |
| Ericsson | Yes |  |
| Qualcomm | Agree | There is a typo in the last change “, or if the Serving Cell operates on FR1,” |
| Ericsson | Yes |  |
| LG | Partly | We agree with the clarification that MPE is applied for FR2 serving cell and not for FR2 serving cell and the correction on usage of P-MPR\_NN. However, generally, the table number in other specification is not specified in MAC spec. |
|  |  |  |

**Table 2. Company comments to** [**R2-2009164**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009164.zip)

**Intermediate conclusions to Q1b: TBA**

**Question 1c: Do you agree with the content of the** [**R2-2008910**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2008910.zip)**?**

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| **Contribution:** [**R2-2008910**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2008910.zip) *Correction of MPE reporting field name Lenovo, Motorola Mobility CR Rel-16 38.321 16.2.1 0900 - F NR\_RF\_FR2\_req\_enh* | | |
| **Company** | **Agree (Yes/No/Partly)** | **Comments** |
| Ericsson | Yes |  |
| Qualcomm | Agree | This CR may be merged with R2-2009164, as both of them emphasize P-MPR is for FR2. |
| ZTE | Yes |  |
| LG | Yes | We agree to align the field name in RRC and MAC specification. |
|  |  |  |

**Table 3. Company comments to** [**R2-2008910**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2008910.zip)

**Intermediate conclusions to Q1c: TBA**

## 2.2 MPE relative threshold triggering

The contributions in [R2-2009906](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009906.zip) and [R2-2010289](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010289.zip) both concern the same topic: How the relative MPE reporting is defined and triggered. Companies are requested to provide comments for both of these.

**Question 2a: Do you agree with the content of the** [**R2-2009906**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009906.zip)**?**

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| **Contribution:** [**R2-2009906**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009906.zip) *38.321 Correction on MPE reporting triggered by the relative threshold ZTE Corporation, Sanechips CR Rel-16 38.321 16.2.1 0949 - F NR\_RF\_FR2\_req\_enh* | | |
| **Company** | **Agree (Yes/No/Partly)** | **Comments** |
| Ericsson | No | We wonder, will the yellow in the following existing condition not be fulfilled at the same time?  - *phr-ProhibitTimer* expires or has expired, when the MAC entity has UL resources for new transmission, and the following is true for any of the activated Serving Cells of any MAC entity with configured uplink:  - there are UL resources allocated for transmission or there is a PUCCH transmission on this cell, and the required power backoff due to power management (as allowed by P-MPRc as specified in TS 38.101-1 [14], TS 38.101-2 [15], and TS 38.101-3 [16]) for this cell has changed more than *phr-Tx-PowerFactorChange* dB since the last transmission of a PHR when the MAC entity had UL resources allocated for transmission or PUCCH transmission on this cell.  The only difference seems to be the green, i.e. that the new trigger does not have a condition on that the UE makes a transmission…? So the difference is that ZTE's new trigger will make the UE trigger the report even when the UE is not scheduled on the particular cell… is that really necessary? It seems like an optimization to us. Usually the UE is in CONNECTED and Active Time because there is data to transmit, so again, is this perhaps only an optimization?  Note that [**R2-2009690**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009690.zip) makes part of this CR obsolete. |
| Qualcomm | No | We do not think this change CR is needed, because relative threshold is already captured by one of the triggers. |
| ZTE | - | It depends on How to understand the relationship between MPE reporting procedure and PHR procedure, as we mentioned before, if these two procedures are independent, we need to define a MPE reporting procedure triggered by relative threshold. If MPE reporting is a part of PHR, this CR is not needed since this have been included into the current PHR procedure trigger. |
| LG | No | In Post e-mail discussion, RAN2 concluded to reuse phr-Tx-PowerFactorChange with no changes. PHR triggering by relative threshold is already captured in the current MAC specification. |
|  |  |  |

**Table 4. Company comments to** [**R2-2009906**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009906.zip)

**Intermediate conclusions to Q2a: TBA**

**Question 2b: Do you agree with the content of the** [**R2-2010289**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010289.zip)**?**

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| **Contribution:** [**R2-2010289**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010289.zip) *38.331 Correction on relative threshold for MPE configuration ZTE Corporation, Sanechips CR Rel-16 38.331 16.2.0 2200 - F NR\_RF\_FR2\_req\_enh* | | |
| **Company** | **Agree (Yes/No/Partly)** | **Comments** |
| Ericsson | No | Even if the CR in [**R2-2009906**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009906.zip) is agreed, this CR is not needed.  The existing RRC wording is "*Value in dB for PHR reporting as specified in TS 38.321 [3].* ".  The MPE is part of "PHR reporting", so we don’t need to change anything.  The formatting of the CR is wrong, and there is a word added without change marks. |
| Qualcomm | No | See our comment on Q2a |
| ZTE | - | It depends on the understanding the relationship between PHR and MPE as we mentioned before. |
| LG | No | With answer in Q2a, this change is not needed. |
|  |  |  |

**Table 5. Company comments to** [**R2-2010289**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010289.zip)

**Intermediate conclusions to Q2b: TBA**

## 2.3 MPE Stage-2 description

There were originally two contributions with Stage-2 descriptions provided, but they have been combined into one input co-signed by both original contributors. Therefore it makes sense to only consider the latest input in this discussion.

**Question 3: Do you agree with the content of the** [**R2-2010981**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010981.zip)**?**

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| **Contribution:** [**R2-2010981**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010981.zip) *Stage-2 description of MPE reporting Nokia (Rapporteur), Ericsson* | | |
| **Company** | **Agree (Yes/No/Partly)** | **Comments** | |
| Ericsson | Yes |  | |
| Qualcomm | Agree with changes | We’d like to suggest the following change, because there are other types of triggers for P-MPR in addition to MPE and the proposed text reads as if P-MPR and MPE are equivalent.  To allow network to detect UL power reduction, the PHR reports may also contain Power Management Maximum Power Reduction (P-MPR, see TS 38.101-2 [35]) information when such a reduction is applied by UE to ensure UE compliance with the Maximum Permissible Exposure (MPE) exposure regulation for FR2 | |
| ZTE | Yes |  | |
| LG | Yes |  | |
|  |  |  | |

**Table 6. Company comments to** [**R2-2010981**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010981.zip)

**Intermediate conclusions to Q3: TBA**

## 2.4 MPE impacts to DC and handover

The documents under this sub-topic concern the following questions:

* During handover, should source node indicate the MPE status of FR2 serving cells received from UE to the target node?
* Is MPE reporting supported for (some) MR-DC architecture options? If yes, to which extent, e.g. should LTE MAC support MPE reporting?
* Is MPE supported during DAPS handover?

**Handover**: The first part of the CR [**R2-2009165**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009165.zip) proposes that inter-node signalling should indicate UE-reported MPE status of FR2 serving cells. This was not truly discussed before, but RAN2 often defines such inter-node signalling rather late.

**Question 4a: Should reported MPE results of FR2 serving cells be conveyed from source cell to target cell during handover? (**[**R2-2009165**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009165.zip)**)**

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| --- | --- | --- |
| **Company** | **Agree (Yes/No/Partly)** | **Comments** |
| Ericsson | No? | The motivation (on the cover page) is that the "*target cell can take appropriate actions*" if it gets the MPE forwarded from the source. The scenario is not clear to us though.  The UE will only send MPE indications for activated serving cells. This means that the gNB (e.g. the target) must keep SCells in activated state in order to receive MPE indications.  If the target activates serving cells for the UE after the handover, a PHR will be triggered. And if the UE still has MPE-issues, the target will see this when it receives the PHR from the UE.  Perhaps the only motivation for this, i.e. one "appropriate action" is that the target can decide to **not** activate FR2 cells after the handover. But how long is this going to last? The target must at some point activate the FR2 cells to receive an MPE indication. And we are back again to that the target must activate the FR2 SCells to get the report.  So, we don’t see a strong motivation for this. |
| Qualcomm | No | PHR is triggered when UE connects to target cell. P-MPR is reported if MPE reporting is configured by the target cell. |
| ZTE | No | Share the same view with Qualcomm, anyway the PHR will be triggered and P-MPR information will be sent to target cell if MPE reporting is configured. |
| LG | No | We think the benefit is unclear. The applied MPE value is changed after handover and the MPE value in source cell is useless. Moreover, in legacy NR, there is no method to inform target cell of that power backoff is used in source cell, but it works well without issue. |
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**Table 7. Company comments to** [**R2-2009165**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009165.zip)**: MPE indication in inter-node messages**

**Intermediate conclusions to Q4: TBA**

**NR-DC**: The second part of [**R2-2009165**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009165.zip) and the proposal 5 of [**R2-2010516**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip) are NR-DC support of MPE reporting, so these questions are considered jointly. The main questions are two-fold:

1. Should MN/SN convey MPE information to each other when MPE reporting is configured (as MN/SN may not know whether MPE reporting is configured in the other MAC entity)? ([**R2-2009165**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009165.zip))
2. Should UE with NR-DC indicate MPE status for MN/SN/all FR2 serving cells when configured with MPE reporting? (Proposal 5 from [**R2-2010516**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip))

**Question 5a: Should MN/SN convey MPE information to each other when MPE reporting is configured (as MN/SN may not know whether MPE reporting is configured in the other MAC entity)?**

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| **Company** | **Agree (Yes/No/Partly)** | **Comments** |
| Ericsson | No | If cross-reporting is deemed necessary (i.e. RAN2 concludes that the answer to question 5b is "Yes"): we think that it is sufficient that the MN receives MPE-indications for SN-cells from the UE. So in this case the answer to this question (5a) is "No".  If cross-reporting is deemed **not** necessary (i.e. RAN2 concludes that the answer to question 5b is "No"): this means that RAN2 deems it not meaningful for the SN to receive MPE-indications from the MN, and vice versa. And also in this case the answer to this question (5a) is "No". |
| Qualcomm | No | The proposed changes do not seem necessary because:   * In EN-DC, LTE MN would consider the P-MPR field as reserved bits; * In FR1+FR2 NR-DC, FR1 and FR2 don't share power. So there is no need for cross-CG reporting; * FR2+FR2 NR-DC: we do not expect actual deployment of this architecture any time soon.   Since no cross-CG reporting is necessary, there is no need to share MPE information between MN/SN. |
| ZTE | No | Share the same view with Qualcomm |
| LG | No | WE don’t see a strong motivation for cross-CG reporting. As Qualcomm mentioned, power sharing between FR1 and FR2 is not supported and we don't think FR2+FR2 is consider in actual deployment. Moreover, even if there is a case where FR2+FR2 is needed, it is a very rare case, and even in the case, network may configure MPE reporting in both CG. |
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**Table 10. Company comments to MN/SN MPE inter-node signalling in NR-DC as per** [**R2-2009165**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009165.zip)

**Intermediate conclusions to Q5a: TBA**

**Question 5b: Should UE with NR-DC indicate MPE status for MN/SN/all serving cells when configured with MPE reporting? (Proposal 5 from** [**R2-2010516**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip)**)?**

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| --- | --- | --- |
| **Proposal 5 In NR-DC, if MPE is configured for a MAC entity, that MAC entity shall report MPE for all serving cells (also the cells of the other MAC entity).** | | |
| **Company** | **Agree (Yes/No/Partly)** | **Comments** |
| Ericsson | Yes | This is about "cross-reporting", i.e. UE reports MPE-info **for** MN cells **to** SN, and vice versa.  Since cross-reporting of PHR is supported, we think we can also support cross-reporting for MPE. |
| Qualcomm | No | See our comments on Q5a |
| ZTE | No |  |
| LG | No | Please see answer in Q5a. |
|  |  |  |

**Table 10. Company comments to NR-DC and DAPS proposals of** [**R2-2010516**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip)

**Intermediate conclusions to Q5b: TBA**

**LTE MAC support**: The remainder of [**R2-2010516**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip) discussed multiple proposals on various topics related to MR-DC support of MPE. The main question in the contribution seems to be whether MPE reporting should be supported towards LTE cells or only to NR FR2 cells, which has obvious consequences for MR-DC cases. The proposals 1-4 essentially propose that MPE reporting is only supported towards NR and no modifications should be done to LTE MAC to enable MPE reporting, as shown below:

**Proposal 1 RAN2 confirms that MPE reporting for SCG-cells to the MN is not supported in EN-DC.**

**Proposal 2 MPE reporting is supported for EN-DC, but UE only reports MPE for the SCG FR2-cells towards the SN (not the MN).**

**Proposal 3 RAN2 confirms that MPE reporting for MCG-cells to the SN is not supported in NE-DC.**

**Proposal 4 MPE reporting to is supported for NE-DC, but UE only reports MPE for the MN FR2-cells towards the MN (not the SN).**

**Question 6: Should MPE reporting be supported for LTE MAC?**

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| --- | --- | --- |
| **Company** | **Agree (Yes/No/Partly)** | **Comments** |
| Ericsson | No | RAN2 was not requested to do this so we don’t think it should be done. The above proposals (1-4) are consequences of this. |
| Qualcomm | No | We agree with all four proposals above. |
| ZTE | No |  |
| LG | No | RAN4 does not request to introduce MPE reporting for LTE MAC, and the benefit is unclear from RAN2 point of view. |
|  |  |  |

**Table 8. Company comments to LTE support of MPE signalling (proposals 1-4 of** [**R2-2010516**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip)**)**

**Intermediate conclusions to Q6: TBA**

**DAPS and MPE**: The remaining question is about support of MPE during DAPS: When DAPS is being executed and MCG MAC entity is configured for MPE reporting, does UE report MPE for both source and target PCell (since neither MR-DC nor SCells are not supported during DAPS handover in Rel-16)?

**Question 7: Do you agree with the proposal 6 of** [**R2-2010516**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip)**?**

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| --- | --- | --- |
| **Proposal 6 In DAPS, if MPE is configured for a MAC entity, that MAC entity shall report MPE for all serving cells (also the cell of the other MAC entity).** | | |
| **Company** | **Agree (Yes/No/Partly)** | **Comments** |
| Qualcomm | No | Please see our comment on Q5a. |
| LG | No | Please see answer in Q4a |
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**Table 10. Company comments to NR-DC and DAPS proposals of** [**R2-2010516**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip)

**Intermediate conclusions to Q7: TBA**

# 3 Conclusions

**TBA**

# 4 List of referenced documents

[1] [R2-2009690](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009690.zip) Miscellaneous correction on MPE reporting to 38.321 LG Electronics Inc., Ericsson, Apple CR Rel-16 38.321 16.2.1 0936 - F NR\_RF\_FR2\_req\_enh

[2] [R2-2008910](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2008910.zip) Correction of MPE reporting field name Lenovo, Motorola Mobility CR Rel-16 38.321 16.2.1 0900 - F NR\_RF\_FR2\_req\_enh

[3] [R2-2009164](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009164.zip) Corrections to MPE reporting Nokia, Nokia Shanghai Bell CR Rel-16 38.321 16.2.1 0909 - F NR\_RF\_FR2\_req\_enh

[4] [R2-2009906](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009906.zip) 38.321 Correction on MPE reporting triggered by the relative threshold ZTE Corporation, Sanechips CR Rel-16 38.321 16.2.1 0949 - F NR\_RF\_FR2\_req\_enh

[5] [R2-2010289](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010289.zip) 38.331 Correction on relative threshold for MPE configuration ZTE Corporation, Sanechips CR Rel-16 38.331 16.2.0 2200 - F NR\_RF\_FR2\_req\_enh

[6] [R2-2009166](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009166.zip) Stage-2 description of MPE reporting Nokia (Rapporteur) CR Rel-16 38.300 16.3.0 0299 - F NR\_RF\_FR2\_req\_enh

[7] [R2-2010515](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010515.zip) Introduction of MPE reporting Ericsson CR Rel-16 38.300 16.3.0 0319 - F NR\_RF\_FR2\_req\_enh

[8] [R2-2010981](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010981.zip) Stage-2 description of MPE reporting Nokia (Rapporteur), Ericsson CR Rel-16 38.300 16.3.0 0299 1 F NR\_RF\_FR2\_req\_enh Late

[9] [R2-2009165](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009165.zip) Corrections to inter-node signalling for MPE reporting Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.2.0 2037 - F NR\_RF\_FR2\_req\_enh

[10] [R2-2010516](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010516.zip) MPE for EN-DC, NE-DC, NR-DC and DAPS Ericsson discussion