3GPP TSG-RAN WG2 Meeting #109bis-e [R2-2003842](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003842.zip)

Elbonia, 20 – 30 April 2020

**Agenda item: 4.5**

**Source: Nokia (RAN2 Vice-chair )**

**Title: Summary and discussion of LTE contributions in AI 4.5**

**Document for: Discussion and Decision**

# 1 Brief scope of the LTE Rel-16 contributions

This document contains the summary of documents from agenda items 7.4 (“Further performance enhancement for LTE in high speed scenario”), 7.5 (“Other LTE Rel-16 WIs”), 7.6 (“LTE TEI16 enhancements”), 7.8 (“DL MIMO efficiency enhancements for LTE”), 7.9 (“LTE-based 5G Terrestrial Broadcast”) as referenced in Section 4.

# 2 LTE Rel-16 topic summaries

## 2.1 TEI16

The documents in [1] and [2] are the only inputs to TEI16 topics.

|  |  |
| --- | --- |
| **Tdoc(s), Title, Company** | **Proposal(s)** |
| 1a) [R2-2002888](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002888.zip) LTE RLC out-of-order delivery configuration Samsung, LG Electronics Inc., Nokia, Nokia Shanghai Bell, Intel, Apple | **Discussed already in RAN2#109-e**Clarification that RLC out-of-order delivery should only be used when t-Reordering is configured for the UE to avoid data loss. |
| 1b) [R2-2002887](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002887.zip) CR on RLC out-of-order delivery configuration Samsung, LG Electronics Inc., Nokia, Nokia Shanghai Bell, Intel, Apple | **CR for above**Clarify that t-Reordering needs to be configured when RLC out-of-order delivery is used |

This topic was already discussed in RAN2#109-e but with not agreement, as shown below (from RAN2#109-e email discusion [203]):

**As conclusion of offline discussion [202] report in** [**R2-2001744**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2001744.zip)**:**

**- The CRs** [**R2-2001726**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2001726.zip) **and** [**R2-2001156**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2001156.zip) **are agreed.**

**- The CR** [**R2-2001508**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2001508.zip) **is not pursued (can be revisited if issues are identified)**

**- The CRs** [**R2-2001347**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2001347.zip) **and** [**R2-2001351**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2001351.zip) **are not pursued (can be revisited if issues are identified).**

The previous CRs were slightl different but still could not be agreed due to concerns from some companies. However, it seems that the content of the CRs is changed, the CRs are from only Rel-16 onwards, and there are more companies supporting the CRs. Therefore, it needs to be discussed if the revised versions could be agreeable.

**DISC S1\_1:** Discuss if the intent of [R2-2002888](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002888.zip) is agreeable. If needed, provided updated revision to CR [R2-2002887](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002887.zip).

## 2.2 DL MIMO efficiency enhancements for LTE

The CRs in [3] and [4] relate to the DL MIMO WI as shown below:

|  |  |
| --- | --- |
| **Tdoc, Title, Company** | **Proposal(s)** |
| 2) [R2-2003546](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003546.zip), [R2-2003547](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003547.zip): “Introduction of UE capabilities for DL MIMO efficiency enhancement”, Huawei, Hisilicon | **New input** Proposes how to capture the UE capabilities for the DL MIMO WI based on latest RAN1 progress (as per LS in [R1-2001485](http://3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_100_e/Docs/R1-2001485.zip)).  |

The capabilities seem straightforward, bu may require checking. Therefore, it is proposed to attempt to endorse the current version as baseline pending any further updates from RAN1.

**Proposal S2\_1:** Endorse the CRs in [R2-2003546](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003546.zip), [R2-2003547](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003547.zip) as baseline for UE capabilities of DL MIMO efficiency enhancements for LTE.

## 2.3 LTE-based 5G Terrestrial Broadcast

The CRs in [5], [6] and [7] all concern the 0.37 kHz SCS for LTE-based 5G Terrestrial Broadcast WI:

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| --- | --- |
| **Tdoc, Title, Company** | **Proposal(s)** |
| 3a) [R2-2003544](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003544.zip): “Discussion on MCCH configuration for 0.37kHz SCS”, Huawei, Hisiliconand[R2-2003545](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003545.zip): “Clarification on MCCH configuration for 0.37kHz SCS”, Huawei, Hisilicon | **New proposal** Discusses how to allow all subframes to carry MBMS in case of 0.37 kHz SCS (in dedicated MBMS carrier).  |
| 3b) [R2-2003364](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003364.zip): “Correction on the configuration of subframe #0 and #5 for MCH in MBMS dedicated cell”, Qualcomm Technologies  | **New proposal** Proposes to define new structure to allow configuration of subframes #0 and #5 as MBMS MCCH subframes. |

It seems the intent of both is the same, but the approach is quite different. However, based on the description it seems there is an issue for the dedicated MBMS carrier with 0.37 kHz SCS configuration. The difference is that the CR in 3a) utilizes existing signalling with additional interpretation, whereas the CR in 3b) defines new signalling to solve the same issue. Since there are only two proposals, it is proposed to discuss whether one of the CRs can be adopted to resolve the identified issue.

**DISC S3\_1:** Discuss which approach can resolve the identified problem: Re-interpretation of existing signalling ([R2-2003545](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003545.zip)) or addition of new signalling ([R2-2003364](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003364.zip)).

# 3 Company comments to the contributions

## 3.1 TEI16 contributions

This section deals with DISC\_S1\_1:

***DISC S1\_1:*** *Discuss if the intent of* [*R2-2002888*](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002888.zip) *is agreeable. If needed, provided updated revision of* [*R2-2002887*](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002887.zip)*.*

Companies are requested to provide comments in the tables 1 and 2 below (one row for each new comment to better keep track of the discussion – please don’t edit the previous comments.

|  |  |
| --- | --- |
| **Company** | **Is the intent of** [R2-2002888](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002888.zip) **agreeable? If not, why?** |
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**Table 1. Intent of the CR**

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| --- | --- |
| **Company** | **If the intent is agreeable, are there any issues with the proposed CR** [R2-2002887](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002887.zip)**?** |
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**Table 2. Details of the CR**

**Conclusions:** TBA

## 3.2 DL MIMO efficiency enhancements for LTE

This section deals with the capability signalling that is proposed to be endorsed as per Proposal S2\_1 as shown below:

***Proposal S2\_1:*** *Endorse the CRs in* [*R2-2003546*](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003546.zip)*,* [*R2-2003547*](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003547.zip) *as baseline for UE capabilities of DL MIMO efficiency enhancements for LTE.*

Companies are requested to indicate if there are any issues that require discussion within the CRs [R2-2003546](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003546.zip), [R2-2003547](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003547.zip) in the summary in the table below.

|  |  |
| --- | --- |
| **Company** | **Issues to discuss for UE capability CRs in** [R2-2003546](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003546.zip), [R2-2003547](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003547.zip) |
|  |  |
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**Table 3. Issues to be discussed for UE capabilities fo DL MIMO efficiency enhancements for LTE**

**Conclusions:** TBA

## 3.3 LTE-based 5G Terrestrial Broadcast

This section deals with the discussion as per DISC S3\_1as shown below:

***DISC S3\_1:*** *Discuss which approach can resolve the identified problem: Re-interpretation of existing signalling (*[*R2-2003545*](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003545.zip)*) or addition of new signalling (*[*R2-2003364*](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003364.zip)*).*

Companies are requested to indicate in case there are objections to the proposals in the summary in the table below.

|  |  |
| --- | --- |
| **Company** | **Which approach should be taken and why: Re-interpretation of existing signalling or addition of new signalling?** |
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|  |  |

**Table 3. Resolving the issue of MCCH allocation for 0.37 kHz SCS in MBMS carrier**

**Conclusions:** TBA

# 4 Conclusions

**Agreements proposed to be agreed in this meeting (from all sub-topics)**

**Proposal S2\_1:** Endorse the CRs in [R2-2003546](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003546.zip), [R2-2003547](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003547.zip) as baseline for UE capabilities of DL MIMO efficiency enhancements for LTE.

**Open items proposed to be further discussed in this meeting (from all sub-topics)**

**DISC S1\_1:** Discuss if the intent of [R2-2002888](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002888.zip) is agreeable. If needed, provided updated revision to CR [R2-2002887](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002887.zip).

**DISC S3\_1:** Discuss which approach can resolve the identified problem: Re-interpretation of existing signalling ([R2-2003545](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003545.zip)) or addition of new signalling ([R2-2003364](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003364.zip)).

# 5 List of referenced documents

[1] [R2-2002887](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002887.zip) CR on RLC out-of-order delivery configuration Samsung, LG Electronics Inc., Nokia, Nokia Shanghai Bell, Intel, Apple CR Rel-16 36.331 16.0.0 4240 - F TEI16

[2] [R2-2002888](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002888.zip) LTE RLC out-of-order delivery configuration Samsung, LG Electronics Inc., Nokia, Nokia Shanghai Bell, Intel, Apple discussion TEI16

[3] [R2-2003546](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003546.zip) Introduction of UE capabilities for DL MIMO efficiency enhancement Huawei, Hisilicon CR Rel-16 36.331 16.0.0 4272 - F LTE\_DL\_MIMO\_EE-Core

[4] [R2-2003547](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003547.zip) Introduction of UE capabilities for DL MIMO efficiency enhancement Huawei, Hisilicon CR Rel-16 36.306 16.0.0 1756 - F LTE\_DL\_MIMO\_EE-Core

[5] [R2-2003364](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003364.zip) Correction on the configuration of subframe #0 and #5 for MCH in MBMS dedicated cell Qualcomm Technologies Int CR Rel-16 36.331 16.0.0 4259 - F LTE\_terr\_bcast-Core

[6] [R2-2003544](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003544.zip) Discussion on MCCH configuration for 0.37kHz SCS Huawei, Hisilicon discussion

[7] [R2-2003545](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003545.zip) Clarification on MCCH configuration for 0.37kHz SCS Huawei, Hisilicon CR Rel-16 36.331 16.0.0 4271 - F LTE\_terr\_bcast-Core