3GPP TSG-RAN WG2 Meeting #112 Electronic draftR2-2011003

Online, 2– 13 November 2020

**Agenda item: 6.2.5**

**Source: Nokia (Summary Rapporteur)**

**Title: Summary on [AT112-e][021][IAB] UE capabilities (Nokia)**

**WID/SID: NR\_IAB - Release 16**

**Document for: Discussion and Decision**

# 1 Introduction

Based on the LS in [R2-200844](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_111-e/LSin/R2-2008444.zip) RAN4 agreed:

1. Power class is not applicable to the IAB-MT
2. IAB-MT can ignore the advertised NS values

This contribution is to provide a summary of TDocs submitted for IAB UE capabilities under 6.2.5 which address the agreement and include [1-5].

# 2 Summary

## 2.1 CATT proposal to feedback RAN4 and remove multipleNS-And-Pmax-IAB-r16‎ in both 38.331 and 38.306

The discussion paper in [1] proposes the following:

Proposal 1: Suggest RAN2 to feedback RAN4 that from RAN2 perspective, there is no any impact to the RAN2 design/signalling if Feature 2-8 (Power ‎class) is not applicable.‎

Proposal 2: Suggest RAN2 to feedback RAN4 that from RAN2 perspective, it’s feasible that IAB-MT doesn’t support the NS signalling and P-max.‎

Proposal 3: Suggest RAN2 to delete the parameter multipleNS-And-Pmax-IAB-r16‎ in both 38.331 and 38.306 and ‎wait for RAN4 decision on how to define the Feature 2-12 (Multiple NS/P-max).‎

Companies are invited to provide their views whether they agree with the proposals.

**Q1: Do you agree with the proposals in [1]? If not, please provide comments.**

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| --- | --- | --- |
| **Company** | **Preference (Y/N)** | **Detailed Comments** |
| Ericsson | Yes to P1, P2  No to P3 | We are fine to inform RAN4 that there is no RAN2 impact.  Intention of P3 is OK, but we cannot simply delete the parameter from the ASN.1. |
| Intel | Y | For proposal 3, agree with [2] to refer to TS 37.174 for IAB-MT radio transmission and reception requirement. |
| CATT  (Component) | Yes to P1, P2  Clarify on P3 | We think a reply LS is needed to feedback RAN4 questions.  For P3, our intention is to delete the parameter multipleNS-And-Pmax-IAB-r16 in 38.306, but dummify the parameter in 38.331. |
| Nokia, Nokia Shanghai Bell | Y | We agree with the intention to inform RAN4, and to dummify unused parameter in ASN.1 (P3) |
| vivo | Y to P1 and P2 | For P3, we prefer to discuss the CRs provided by Nokia and HW below in section 2.2 and 2.3. |
| Huawei | Y to P1/2 | For P3, it depends on the 38331 CR decision. We should be careful on the ASN.1 change. |

Conclusion on Q1: All companies agreed to feedback RAN4 that that from RAN2 perspective:

* there is no impact to RAN2 design/signalling if Feature 2-8 (Power class) is not applicable to IAB-MT
* it is feasible that that IAB-MT doesn’t support the NS signalling and P-max.

Only 2 out of 6 companies agreed to delete the parameter multipleNS-And-Pmax-IAB-r16‎ in both 38.331 and 38.306. However, detailed implication of the removal is elaborated and concluded in further proposals on the discussed CRs to 38.331 and 36.306.

**Proposal 1:** RAN2 agrees to send a LS to RAN4 in [8] to inform that that from RAN2 perspective:

* there is no impact to RAN2 design/signalling if Feature 2-8 (Power class) is not applicable to IAB-MT
* it is feasible that that IAB-MT ignores the NS signalling and P-max.

## 2.2 Nokia CRs to remove multipleNS-And-Pmax-IAB-r16‎ in both 38.331 and 38.306

The CR in [2] and [3] proposes changes to TS 38.306 and TS 38.331 as follows:

Changes of the CR to TS38.331 contain:

1. Adding reference to TS37.174 on IAB radio transmission and reception requirements
2. In SIB1,SIB2, SIB4 acquisition procedure, clarification to apply maximum output power to IAB-MT, according to specified IAB requirements in TS37.174
3. In *p-max* field description, clarification the field is ignored for IAB-MT
4. In *nr-NS-PmaxList* description, clarification the field is ignored for IAB-MT
5. In *MeasandMobParameters* UE capability, *multipleNS-And-Pmax-IAB* capability is dummified

Changes of the CR to TS38.306 contain:

1. *multipleNS-And-Pmax-IAB* capability removal, as no requirements exist to support NS values by IAB

The changes in TS38.331 CR intend to clarify IAB radio transmission and reception requirements are defined in a separate RAN4 TS, and regular UE procedures do not apply for IAB-MT, in context of p-max and multiple nr-NS use.

Companies are invited to provide their views whether they agree with the proposed changes.

**Q2: Do you agree with the changes proposed in [2] CR to 38.306? If not, please provide comments.**

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| **Company** | **Preference (Y/N)** | **Detailed Comments** |
| Ericsson | Y |  |
| Intel | Y |  |
| CATT | Y |  |
| Nokia, Nokia Shanghai Bell | Y |  |
| vivo | Y |  |
| Huawei | N | It is no harm just to keep the 38.306 as it is for *multipleNS-And-Pmax-IAB*, regardless whether to dummy it in RRC. |

Conclusion on Q2: 5 companies out of 6 agreed to the changes proposed in [R2-2009417](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2009417.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_112-eDocsR2-2009417.zip) [2] to remove the *multipleNS-And-Pmax-IAB* in 38.306.One company wanted to keep the capability regardless of the parameter being practically not used.

This CR require further update to cover the changes discussed in [5], according to conclusion 5. Therefore, a new updated CR is proposed to be worked out for agreement.

**Proposal 2:** Agree to TS38.306 CR in [6] removing the capability *multipleNS-And-Pmax-IAB.*.Since, the multiple NS are not defined for IAB-MT in RAN4 specifications, the changes in TS38.306 CR are to remove the capability that was previously agreed as a placeholder for potentially defined requirements.

Companies are invited to provide their views whether they agree with the proposed changes.

**Q3: Do you agree with the changes proposed in [3]? If not, please provide comments.**

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| **Company** | **Preference (Y/N)** | **Detailed Comments** |
| Ericsson | Y to 4th, 5th,6th change  N to 1st, 2nd, 3rd change | We are ok with the changes to the field descriptions.  But we do not see the need for this change:  2> else if UE is IAB-MT:  3> apply output power and emissions requirements, as specified in TS 38.174[xx];The IAB node will be compliant with whatever is specified for it in RAN4 specifications, i.e. TS 38.174 and TS 38.101. We do not need to capture this in the RRC procedural text, since no RRC parameter is involved here. |
| Intel | Y with comment | We don’t have a strong view to change 1/2/3, however, we think it would be good to capture behaviour to IAB-MT when ignoring the advertised NS values and P-max in TS38.331. |
| CATT | Y to 4th, 5th,6th change  N to 1st, 2nd, 3rd change | Agree with Ericsson. |
| Nokia, Nokia Shanghai Bell | Y | We agree that IAB needs to compliant with RAN4 specifications, but specifically for IAB (in contrary to 38.101 requirements). Thus, we are fine to further limit the changes in SIB acquisition procedures, but still make the reference to TS 37.174 for IAB-MT radio transmission and reception requirement (e.g. field description). |
| vivo | Y with comment | According to the LS from RAN4, IAB-MT should ignore the advertised NS during the **initial access procedure**. So we are ok to modify the SIB1/2 procedures, but we are not clear why SIB4 procedure is also impacted. |
| Huawei | See comments | 1. Not sure about the change to SIB1 procedure. We can not just skip all the operations for UE in SIB1, where some operations are also essential for IAB-MT, like “consider the cell as barred for IAB-MT” “apply the configuration included in the *servingCellConfigCommon*;” etc.   2> else if UE is IAB-MT:  3> apply output power and emissions requirements, as specified in TS 38.174[xx];   1. Not sure about the change to p-Max field description, which seems not aligned with R4. 2. Dummy multipleNS-And-Pmax-IAB needs more companies’ view. |

Conclusion on Q3: 5 companies out of 6 agreed to the changes 4, 5, 6 which contain:

1. In *p-max* field description, clarification the field is ignored for IAB-MT
2. In *nr-NS-PmaxList* description, clarification the field is ignored for IAB-MT
3. In *MeasandMobParameters* UE capability, *multipleNS-And-Pmax-IAB* capability is dummified

2 companies out of 6 disagreed to the changes 1, 2, 3. However 4 out of 6 companies expressed a need to further work out detailed implementation of the changes (1,2,3) to cover in RAN2 specification the RAN4 requirement, that IAB-MT should ignore the advertised NS during the initial access procedure.

The CR in [3] requires further update to cover the changes according to conclusion 3 and 4 (see below). Therefore, a new updated CR is proposed to be worked out for agreement.

## **Proposal 3:** Agree to TS38.331 CR in [7] reflecting RAN4 requirements that IAB-MT should ignore the advertised NS during the initial access procedure.2.3 Huawei CRs to remove multipleNS applicability during SIB1 acquisition in 38.331 and add clarification on power class inapplicability for IAB-MT

The CR in [4] and [5] proposes changes to TS 38.306 and TS 38.331 as follows:

Changes of the CR to TS38.331 contain:

1. In section 5.2.2.4.2, for SIB1 acquisition, the condition bullet related to the NR-NS-PmaxList, is updated to allow the case that IAB-MT can ignore the advertised NS values.

Changes of the CR to TS38.306 contain:

1. In section 4.2.7, the field description of ue-PowerClass and powerClass is updated to add clarification “This capability is not applicable to IAB-MT.”

**Q4: Do you agree with the changes proposed in [4]? If not, please provide comments.**

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| **Company** | **Preference (Y/N)** | **Detailed Comments** |
| Ericsson | N | We do not get the intention of this CR. It does not seem to match the RAN4 request.  The changes discussed above in [R2-2009418](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2009418.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_112-eDocsR2-2009418.zip) would be enough. |
| Intel | Y with comment | We don’t have a strong view to change in SIB1, however, we think it would be good to capture behaviour to IAB-MT when ignoring the advertised NS values and P-max in TS38.331. |
| CATT | Y with comment | It would be better to add some description in SIB1 acquisition procedure to allow the case that IAB-MT can ignore the advertised NS values. Detail wording can be further discussed. |
| Nokia, Nokia Shanghai Bell | N | SIB1 is one of the SIBs where applying multiple NS values would require clarification. Therefore, CR is not fully covering the needed changes. |
| vivo | See comments | This CR can be discussed with the paper [R2-2009418](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2009418.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_112-eDocsR2-2009418.zip) in section 2.3. |
| Huawei | Y, see comments | We are fine to work together with [R2-2009418](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2009418.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_112-eDocsR2-2009418.zip) on the updated changes. |

Conclusion on Q4: 4 companies out of 6 suggested to discuss the changes in R2-2010352 [4] together with [3] [R2-200941](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2009417.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_112-eDocsR2-2009417.zip)8. Contentious parts concern SIB1/2/4 acquisition and behaviour to IAB-MT when ignoring the advertised NS values and P-max in TS38.331. Therefore, a new updated CR is proposed to be worked out for conclusion 3 should also consider companies remarks for the CR in [4].

**Proposal 4:** Agree to capturebehaviour to IAB-MT when ignoring the advertised NS values and P-max in TS38.331 in CR in [7].

**Q5: Do you agree with the changes proposed in [5]? If not, please provide comments.**

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| **Company** | **Preference (Y/N)** | **Detailed Comments** |
| Ericsson | Y |  |
| Intel | Y |  |
| CATT | Y |  |
| Nokia, Nokia Shanghai Bell | No strong view | It would become clear from CR to TS38.331, but can be added for clarity |
| vivo | Y |  |
| Huawei | Y | This is to capture the R4 LS on feature 2-8. |

Conclusion on Q5: 5 companies out of 6 agreed to the changes in R2-2010353 [5]. Rapporteur suggestion is to merge the changes together with [2] [R2-200941](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2009417.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_112-eDocsR2-2009417.zip)7. Thus, an updated CR is proposed to agree changes covering removal the capability *multipleNS-And-Pmax-IAB* and claryfication to the field description of *ue-PowerClass* and *powerClass*.

**Proposal 5:** Agree to merge CR in [5] to an updated TS38.306 CR in [6] covering removal the capability *multipleNS-And-Pmax-IAB* and clarification to the field description of *powerClass* and *ue-PowerClass* on non-applicability to IAB-MT*.*

# 3 Conclusion

**Proposal 1:** RAN2 agrees to send a LS to RAN4 in [8] to inform that that from RAN2 perspective:

* there is no impact to RAN2 design/signalling if Feature 2-8 (Power class) is not applicable to IAB-MT
* it is feasible that that IAB-MT ignores the NS signalling and P-max.

**Proposal 2:** Agree to TS38.306 CR in [6] removing the capability *multipleNS-And-Pmax-IAB.*

**Proposal 3:** Agree to TS38.331 CR in [7] reflecting RAN4 requirements that IAB-MT should ignore the advertised NS during the initial access procedure.

**Proposal 4:** Agree to capturebehaviour to IAB-MT when ignoring the advertised NS values and P-max in TS38.331 in CR in [7].

**Proposal 5:** Agree to merge CR in [5] to an updated TS38.306 CR in [6] covering removal the capability *multipleNS-And-Pmax-IAB* and clarification to the field description of *powerClass* and *ue-PowerClass* on non-applicability to IAB-MT.

# References

[1] [R2-2008954](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2008954.zip), *Discussion on the Issues from RAN4 LS on IAB-MT Feature List,* CATT

[2] [R2-2009417](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2009417.zip) *Clarification on IAB-MT capability for Multiple NS* Nokia, Nokia Shanghai Bell

[3] [R2-2009418](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2009418.zip) *Clarification on Multiple NS and Pmax applicability to IAB-MT* Nokia, Nokia Shanghai Bell

[4] [R2-2010352](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2010352.zip) *Corrections based on RAN4 LS about IAB-MT feature* Huawei, HiSilicon

[5] [R2-2010353](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2010353.zip) *Corrections based on RAN4 LS about IAB-MT feature* Huawei, HiSilicon

[6] [R2-2011019](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2009417.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_112-eDocsR2-2009417.zip) *Clarification on Power class, Multiple NS and Pmax applicability to IAB-MT* Nokia, Nokia Shanghai Bell, Huawei

[7] [R2-2011020](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Docs/R2-2009418.zip" \o "D:Documents3GPPtsg_ranWG2TSGR2_112-eDocsR2-2009418.zip) *Clarification on Multiple NS and Pmax applicability to IAB-MT* Nokia, Nokia Shanghai Bell , Huawei

[8] R2-2011021, *Reply on IAB-MT feature list*, RAN2 LS out

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