**3GPP TSG-RAN WG2 Meeting #110e R2-20xxxxx**

**Online, June 1 – June 12, 2020**

**Agenda item:** 6.1.2

**Source:** Qualcomm Incorporated (Rapporteur)

**Title:** [AT110e][041][IAB] 3800/36300 – Open issues

**Document for:** Discussion

# Introduction

This document handles TS 38300/36300-related open issues as part of offline email discussion:

* [AT110e][041][IAB] Stage-2 (Qualcomm, Huawei)

Scope: Treat papers under 6.1.2, issues, corrections etc, Capture meeting agreements impact to TS. Can take into account LSes etc, Endorsed CRs from last meeting is the baseline for further updates, if any are agreeable,

 Intended outcome: Agreed CRs 38300 36300 (QC), 37340 (Huawei)

 Deadline: June 11, 0700 UTC

There have been several contributions on the support of other Rel-16 features with IAB.

* R2-2005520 proposes that IAB should not support 2-Step RACH, NR-U, IIoT and UE power saving.
* R2-2004782 and R2-2005672 propose that IAB support CHO. R2-2004782 further discusses related specification impact.
* R2-2005628 provides a list of Rel-16 WIs with some recommendations on cross-Rel-16-feature support.

This email discussion aims to converge on the subset of Rel-16 features that can be supported with IAB and to identify the corresponding impact on specification. This discussion follows the feature list provided by R2-2005628.

We need to differentiate, if:

1. A feature is supported for IAB, i.e., it improves IAB performance/functionality
2. A feature is supported for UEs connected to IAB.

Section 2 focuses on feature support for IAB. Section3 focuses on feature support for UEs connected to IAB.

Section 4 aims to identify other open issues related to stage-2.

**Summary:**

…

# 2 Discussion: Features supported for IAB

2.1 NR-U support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | No | While beneficial for IAB, more discussion is needed. This can be done in Rel-17. |
| KDDI | No | We are basically negative to start the discussion for its impact. RAN plenary approval is needed to start the discussion. |
| vivo | No | Postpone to Rel-17. |
| Ericsson | No | **Our comment applies to this and all other subsections under section 2.** In general, we disagree on combining features without having a proper discussion and analysis of the protocol and ASN.1 impacts of the support. There could also be a RAN3 impact. This last meeting is not appropriate to start doing such studies and analysis. Thus, considering this is the last meeting, we disagree on combining the support of features that have not been discussed and agreed before. |

2.2 V2X support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | No | Not needed for IAB |
| KDDI | No | We are basically negative to start the discussion for its impact. RAN plenary approval is needed to start the discussion. |
| vivo | No | Not needed in Rel-16. |
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2.3 RACS support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | May be | We have not yet agreed if IAB-MT uses UE capabilities. |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
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2.4 IIOT support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | No | Not clear which aspect of IIOT would apply to IAB apart from URLLC and NPN, which are captured in separate sub-sections. |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
| vivo | No | Good to support this feature but probably in R-17 |
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2.5 URLLC support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | No | URLLC may certainly be beneficial for latency reduction on BH. However, this needs more discussion which should be done in Rel-17. |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
| vivo | No | Postpone to Rel-17. |
|  |  |  |

2.6 Positioning support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | No | IAB-MTs are considered stationary, and therefore, positioning is not needed. |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
| vivo | No | The deployment of IAB in Rel-16 is well planned. |
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2.7 Mobility Enhancements support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | Depends… | Fast MCG recovery: already agreed CHO: should be supported; this has implications on stage-2 as discussed in R2-2004782.DAPS: not needed for Rel-16 IAB since the benefits are wiped out by the interruption time due to IPsec setup and F1AP signalling after IAB-MT migration. |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
| vivo | No | Except fast MCG recovery, the support of other feature such as CHO or DAPS need more discussion. This also links to the MT measurement functionality. We don’t have enough time to discuss the detail right now. |
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2.8 DCCA support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | Yes | As long as stage-3 specifications can be used off the shelf. |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
| vivo | Yes | This can be useful for IAB. |
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2.9 Power saving support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | No | Not critical for IAB-node.  |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
| vivo | No | Could be useful for IAB-MT but right now we have no sufficient time to discuss the IAB specific issues in Rel-16.  |
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2.10 SON/MDT support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | Yes | As long as stage-3 specifications can be used off the shelf.  |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
| vivo | Yes | This can be useful for IAB. |
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2.11 2-step RACH support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | May be | This feature is not critical for IAB, and the benefits can be expected negligible. It could still be used off the shelf, i.e., without specification impact. |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
| vivo | No | This requires discussion in RAN1. |
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2.12 SRVCC support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | No | Not needed |
| KDDI | No | Not needed from our perspective |
| vivo | No | Not needed  |
|  |  |  |

2.13 CLI support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | Yes | Important feature for inter-backhaul and inter-access/backhaul interference management. This was discussed during Rel-16 WID. The CLI WI was supposed to support IAB-compliant specifications.  |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
| vivo | Yes | This could be an optional feature for IAB |
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2.14 eMIMO support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | Yes | As long as specification is used off the shelf. |
| KDDI | Yes | At this moment we cannot come up with an issue, it seems no additional specification impact. |
| vivo | Yes | This could be an optional feature for IAB |
|  |  |  |

2.15 NPN support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | May be | There is a separate thread on this topic. RAN2 further agreed to not touch this subject before we heard back from RAN3 and CT1 that they would support this features. |
| KDDI | Yes | We are now discussing under [AT110-e][049][IAB] Other (Huawei) |
| vivo | No | We can further discuss this in Rel-17 |
|  |  |  |

2.16 TEI support for IAB

**Questions:**

* Should this feature be supported for IAB? (YES: (very) beneficial; NO: not (really) needed)
* What is the specification impact? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **Support?****(YES/NO)** | **What is the specification impact? Other comments.** |
| QC | TBD | TBD |
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# 3 Features supported for UE connected to IAB

3.1 NR-U support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | No problem as long as BH uses NR. |
| KDDI | No | We are basically negative to start the discussion for its impact. RAN plenary approval is needed to start the discussion. |
| vivo | Yes | This could be an optional feature for IAB. |
| Ericsson | Yes | **Our comment applies to this and all other subsections under section 3.** In general, a UE does not know if it is connecting to an IAB or a regular gNB. From that point of view, the configuration that the CU provides to the UE will depend on the CU and if it can deliver the service or not. URLLC is one example. A UE may be URLLC and whether the network can provide the service or not is independent of what the UE supports. We do not see any reason to restrict features when a UE connects to an IAB. |

3.2 V2X support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

|  |  |  |
| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB |
| KDDI | No | We are basically negative to start the discussion for its impact. RAN plenary approval is needed to start the discussion. |
| vivo | Yes | Seems no impact for IAB. |
|  |  |  |

3.3 RACS support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB |
| KDDI | Yes | Transparent to IAB |
| vivo | Yes | Seems no impact for IAB. |
|  |  |  |

3.4 IIOT support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | No | Not clear which aspects this includes apart from URLLC and NPN which are captured separately. TSN over multi-hop BH is not supported. |
| KDDI | Yes | Transparent to IAB |
| vivo | no | The QoS guarantee of IAB shall be further enhanced to support IIoT. We can discuss this in Rel-17. |
|  |  |  |

3.5 URLLC support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | No |  Not supported over multi-hop BH. |
| KDDI | Yes | Transparent to IAB |
| vivo | No |  The QoS guarantee of IAB shall be further enhanced to support URLLC. We can discuss this in Rel-17. |
|  |  |  |

3.6 Positioning support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | IAB-DUs are time synchronized as wireline DUs. Not clear if anything else is needed. |
| KDDI | Yes | Transparent to IAB |
| vivo | Yes but… | It depends on the network and UE is transparent. The synchronization issue shall be discussed from the perspective of positioning. |
|  |  |  |

3.7 Mobility Enhancements support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB. |
| KDDI | Yes | Transparent to IAB |
| vivo | Yes | Seems no impact for IAB. |
|  |  |  |

3.8 DCCA support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB. |
| KDDI | Yes | Transparent to IAB |
| vivo | Yes | Seems no impact for IAB. |
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3.9 Power saving support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB. |
| KDDI | Yes | Transparent to IAB |
| vivo | Yes | Seems no impact for IAB. |
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3.10 SON/MDT support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB. |
| KDDI | Yes | Transparent to IAB |
| vivo | Yes | Seems no impact for IAB. |
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3.11 2-step RACH support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB. |
| KDDI | Yes | Transparent to IAB |
| vivo | Yes | Seems no impact for IAB. |
|  |  |  |

3.12 SRVCC support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB. |
| KDDI | Yes | Transparent to IAB |
| vivo | Yes | Seems no impact for IAB. |
|  |  |  |

2.13 CLI support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB. |
| KDDI | Yes | Transparent to IAB |
| vivo | Yes | Seems no impact for IAB. |
|  |  |  |

3.14 eMIMO support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB. |
| KDDI | Yes | Transparent to IAB |
| vivo | Yes | Seems no impact for IAB. |
|  |  |  |

3.15 NPN support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | Yes | Transparent to IAB. |
| KDDI | Yes | We are now discussing under [AT110-e][049][IAB] Other (Huawei) |
| vivo | Yes | Seems no impact for IAB. |
|  |  |  |

3.16 TEI support for IAB

**Questions:**

* Is there any problem if this feature is supported for UEs connecting to IAB? (YES: (very) beneficial; NO: not (really) needed)
* What needs to be done to provide UE support of this feature? (please provide specifics, i.e., stage-2 vs. stage-3, ASN.1, protocols affected, etc.)

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| --- | --- | --- |
| **Company** | **UE-supported?****(YES/NO)** | **What needs to be done to provide UE support? Other comments.** |
| QC | TBD | TBD |
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# 4 Other open issues

**Question:**

* Are there any other open issues related to stage-2 38300/36300?

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| **Company** | **Comments** |
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# 5 Conclusion