**3GPP TSG-RAN WG4 Meeting #94-e R4-2002509**

**Electronic Meeting, Feb.24th – Mar.6th 2020**

**Agenda item:** 8.5.1

**Source:** Huawei

**Title:** Email discussion summary for RAN4#94e\_#80\_NR\_IAB\_System\_parameters

**Document for:** Information

# Introduction

This topic area deals with the system parameters for IAB, this includes the general sections of the TS as well as the frequency and channel arrangements.

The discussion on the specification drafting methodology is necessarily discussed in this topic area also – although it will be applied to all spec drafting.

There is some overlap between topic areas particularly in the area of the BS class definitions and the TX output power, it has been decided to treat this issue in the “RAN4#94e\_#82\_NR\_IAB\_RF\_Tx” subject area a 3 papers have been moved to that discussion group.

The subjects in this discussion area have been separated into 3 topics:

* + TS Drafting and referencing
  + TS Drafting – General section (Clause 4)
  + TS Drafting - Operating bands and channel arrangement (clause 5)

# Topic #1: TS Drafting and referencing

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2002123 | Qualcomm | WF on IAB TS spec structure and terminology |
| R4-2002043 | Huawei | Discussion on drafting TS and referencing  **Observation 1:** If specific referencing is used CR’s to incorporate updates in the donor/referenced documents are needed for those updates to be applied. |

## Open issues summary

The level of referencing to donor BS and UE specification still under discussion.

### Sub-topic 1-1

WF (R4-2002123) was drafted between meetings, R4-2002043 provides more background on problems associated with specific referencing.

**Issue 1-1: TBA**

* Proposals
  + Option 1: Referencing
    - If the requirements of an IAB-DU are same as those of a gNB, 38.174 may refer to the corresponding sections of gNB specs. Additional text will be added to highlight the differences from the source specs.
    - If the requirements of an IAB-MT are same as those of a UE, 38.174 may refer to the corresponding sections of UE specs. Additional text will be added to highlight the differences from the source specs.
  + Option 2: Self contained
  + Good readability without thinking hard how to write good “delta” info text.
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| ZTE | Sub topic 1-1: support option 1 and lots of requirement for IAB DU and IAB MT is just copy&paste just replace the term NR BS or UE by NR IAB DU or NR IAB MT. |
| CATT | Sub topic 1-1: We’re just beginning to follow this topic. So we don’t have very clear view on this. But looking at what’re discussing in this meeting, there’re many requirements which may not copy exactly UE or BS requirements. Then considering this, we think it’s not just copy or self-contained. There will be some specific requirements for IAB. We support option 2. It’ll be clearer. |
| Samsung | Sub topic 1-1: it should be not separated 2 options there. We agree to have reference approach as much as possible at least for most of the IAB-DU requirements of which BS requirement could be applied. But for those requirements could not refer to BS or UE simply, they definitely should be discussed case by case. |
| Ericsson | Sub topic 1-1: option 2 is preferred. Related to this, how to maintain the IAB spec should also be discussed. Our opinion is that the IAB spec need to be evaluated anyway even if reference approach is chosen. So we cannot save future work in this aspect. If so, should the good readability should be targeted as there are terminology difference in IAB context. How to write the “delta” text for the reference approach also not too clear. |
| Nokia, Nokia Shanghai Bell | Sub topic 1-1: Generally, referencing the sections when the requirements are the same guarantees that the updates to UE/BS specifications are propagating to IAB-specifications in a timely manner without the need of additional CRs and simultaneously avoiding the risk of diverging specifications. Therefore, option 1 is preferred in case the requirements are the same.  Referencing should not be used in case the requirements differ or there is a risk that updates in the source specification will not be applicable for IAB-Nodes. Therefore, we see that referencing would be applicable mainly to IAB-DU requirements and system parameters. |
| Qualcomm | Sub topic 1-1: support option 1. For those requirements that are different than UE and BS requirements, referencing will not be considered. |
| Huawei | Sub topic 1-1: As per our paper we think large amounts of specific referencing can create more work than it saves, unless requirements can be referenced in a non-specific manner then option 2 is best. |

### CRs/TPs comments collection

*Major close-to-finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| XXX | Company A |
| Company B |
|  |
| YYY | Company A |
| Company B |
|  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic#1-1** | It seems that it is not as clear as with option 1 or option 2. Some things are common throughout the comments, for example:   * For those requirements that are different than UE and BS requirements, referencing will not be considered.   This can possibly be agreed.  Those who favor referencing indicate that it should be used if the referenced text is identical with the exception of substituting IAB-DU for BS and IAB-MT for UE, one possible agreement could be if change is more extensive than this substitution then referencing should not be used.  Nokia suggest mainly using referencing for IAB-MT (to BS) and system parameters this is another option.  How specific and non-specific referencing is handle is another open issue to discuss.  *Tentative agreements:*   * For those requirements that are different than UE and BS requirements, referencing will not be considered.   *Candidate options:*   * Referencing with modification is only used when the substitution is IAB-DU for BS and IAB-MT for UE. * Referencing is used for system parameters   Referencing is only used for IAB-DU*Recommendations for 2nd round:*  The decision from this is very important as it triggers specification drafting work. It may be that each clause needs to be considered separately but some general rules to apply could be attempted in a way forward.  Many companies have quite polarized view on this so I have tried to select a more neutral company to draft the WF, Nokia seem to be somewhat in the middle on the subject so suggest Nokia look after the WF to attempt to find consensus |

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
| #1 | WF on TS drafting referencing rules | Nokia |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

Discussion was focused around the WF R4-2002484, the WF lists some agreeable guidelines for referencing rather than absolute rules

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2002484 | *Agreeable* |

# Topic #2: TS Drafting – General section (Clause 4)

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2001902 | Ericsson | TP to TS 38.174: subclause 3.1, Definitions |
| R4-2002044 | Huawei | TP to TS 38.174, clause 4 |
| R4-2001901 | Ericsson | TP to TS 38.174, subclause 4.3, Conducted and radiated requirement reference points |
| R4-2001852 | Ericsson | TP to TS38.174, subclause 4.7.1 Applicability of signaling characteristics related RRM requirements |
| R4-2001887 | Ericsson | TP to TR, subclause 4.2, RF Requirements reference points |
| R4-2001888 | Ericsson | TP to TR, subclause 4.1, Spec organization/ Relation with other core specification |
|  |  |  |

## Open issues summary

TPs include text for the general section in clause 4 and some definitions in clause 3

### Sub-topic 2-1 – subclause 3.1 - definitions

A number of TP’s to the TS contain definitions of terms used in those TP’s, R4-2001902 however contains 4 definitions for UL and DL

**Issue 2-1: TBA**

* Proposals
  + Agree proposed definitions
* Recommended WF
  + TBA

### Sub-topic 2-2 – subclause 4.1, 4.2

Text in R4-2002044, contains text for subclause 41. “Relationship with other core specifications” and subclause 4.2 “Relationship between minimum requirements and test requirements”

R4-2001888 is text for the TR on “Relation with other core specification” which provides more detail.

**Issue 2-1: TBA**

* Proposals
  + Accept TP to TS 38.174 for subclauses 4.1,4.2
  + Accept TP to TR 38.xxx for subclauses 4.1
* Recommended WF
  + TBA

### Sub-topic 2-3 – Subclause 4.3

Very similar (identical?) updates in R4-2002044 and R4-2001901.

Note both offer a generic IAB type 1-H, 1-O or 2-O architecture definition, they do not differentiate between IAB-DU and IAB-MT.

R4-2001887 is aTP to the TR on the same subject with background.

**Issue 2-2: TBA**

* Proposals
  + Agree TP for subclause 4.3
* Recommended WF
  + TBA

### Sub-topic 2-4 – Subclause 4.4

R4-2002044 updates BS classes subclause, this subject along with 3 papers (R4-2001868, R4-2001886 and R4-2001903) have been moved to RAN4#94e\_#82\_NR\_IAB\_RF\_Tx as the subject is linked to the Tx output power discussion

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| ZTE | Sub topic 2-1: prefer to define the IAB definition as package and some suggestions are added  IAB MT uplink: It is used by the IAB MT for transmitting signals to parent IAB node.  IAB DU uplink: It is used by the IAB DU for receiving signals from child IAB MT or legacy NR UE.  IAB MT downlink: It is used by the IAB MT for receiving signals from parent IAB node.  IAB DU Downlink: It is used by the IAB DU for transmitting signals to child IAB MT or legacy NR UE.  Sub topic 2-2:for sub-clause 4.1 and 4.2, I think that most of parts are fine, but test confromance spec is not ready, maybe we could wait for a while for spec numbering.  Sub topic 2-3: the following secion might have applicability problem when it applied to IAB MT, as MIMO layer for uplink is limited compared with DL. For Downlink, 12 layer for MU-MIMO and 8 layer for SU-MIMO and only 4 layer for uplink regardless of MU-MIMO or SU-MIMO.  For an *IAB type 1-O* the transceiver unit array must contain at least 8 transmitter units and at least 8 receiver units. Transmitter units and receiver units may be combined into transceiver units. The transmitter/receiver units have the ability to transmit/receive parallel independent modulated symbol streams. |
| CATT | Sub topic 2-1: We don’t have strong opinion on this. But I have some clarification question. I don’t know how to use these 4 definitions. I looked at RAN2 running CR, there’re some definitions. IAB MT and IAB DU are named as “IAB-MT” and “IAB-DU”. And there’re no specific IAB downlink and uplink definition in the RAN2 CR. To my understanding, there’s no confusion on the uplink and downlink understanding in IAB scenario. But if all of you think it’s necessary, then I’m ok.  Sub topic 2-2~2-4: Some editorial comments for both R4-2002044 and R4-2001888. “IAB\_DU” should be “IAB-DU”? And the same with “IAB\_MT” |
| Samsung | Sub topic 2-1: please note that the upstream link of IAB could be parent IAB and donor gNB. And downstream link of IAB could be child IAB and UE. It is proposed that the definition can be included with the understanding on how and where to use them in specification.  Sub topic 2-2/2-3/3-4: in R4-2002044 there is definition on MT class, not sure whether it can be agreed as it is as mentioned in summary. And there is no agreement on how to handle conformance testing specification for IAB. It may be premature to include them now or at least [] should be put on them. For R4-2001887, further checking needed, it was discussed in last year backhaul link and access link are not suggested to be applied for IAB, which may bring ambiguity since there exist both CH BH and parent BH. And for NR BS RF it states as “IAB DU shall reuse the relevant requirements from spec in TS 38.104 and no new requirement will be developed for IAB DU” this may be too arbitrary statement. And it is suggested to be refined as “IAB DU will reuse the relevant requirements from spec in TS 38.104 where applicable” |
| Ericsson | Sub topic 2-1: ok with proposal. The definition is related to the general description of the channel bandwidth, there is a need to clarify uplink and downlink for IAB DU and IAB MT.  “The *BS channel bandwidth* supports a single NR RF carrier in the uplink or downlink at the Base Station”  “The UE channel bandwidth supports a single NR RF carrier in the uplink or downlink at the UE.”  Sub topic 2-2: for 4.1, we need add what is IAB, suggest to add “IAB (Integrated Access and backhaul) is an evolved Base station equipped with wireless backhaul functionality.”  For 4.2, we need more understanding on test spec of IAB before make decision.  Sub topic 2-3: For 4.3. Agree.  Sub-topic 2-4: For 4.4, two comments on R4-2002044  1. As IAB has different type not DU or MT, suggest changing IAB DU Type 1-O or 2-O to IAB type 1-O or 2-o  2. we are not sure on different DU class and MT class, we believe MT and DU should be same class in R16, for different class DU and MT on the same IAB node, we need more study for that. |
| Nokia, Nokia Shanghai Bell | Sub topic 2-1: It is unclear which definitions exactly are proposed to be agreed. At the moment we do not see it necessary to define the terms proposed in R4-2001902. In the proposed definitions in R4-2002044 we suggest to revise term “RIB” to “RIB(s)” as this would better reflect that IAB-MT and IAB-DU are not mandated to share the same RIB. It has not been agreed yet whether MT and DU have one requirement set or whether there are 2 requirement sets, and therefore the definitions should be updated to use “requirement set(s)”.  It seems R4-2001888 is also defining new terms “RAT NR BS” and “RAN NR UE” though this is not taking place in definitions section. These definitions are not needed.  Sub topic 2-2: TP to TR in R4-2001888 is not yet at the quality level to be accepted. It is not good to state “IAB compliant to 38.174 is by default compliant to 38.104” as it is unclear whether IAB-DU or IAB-MT or both are meant and also in case of self-contained specification 38.104 and IAB-DU part of 38.174 may diverge by accident. It is not correct to state “RF spec relevant to wireless backhaul is quoted with IAB-MT requirement” as also IAB-DU will operate in wireless backhaul. Unclear why TR 38.803 is referenced when FR1 range was revised after creation of 38.803. The definitions at the end are not needed as commented in sub-topic 2-1.  Additionally, the spoken language like “spec” should be cleaned up and terms IAB-Node, IAB-DU and IAB-MT should be used consistently to avoid possibilities for misunderstandings.  Sub topic 2-3: These comments are based on the understanding that the TP is proposed to be agreed to the TS. Change marks in R4-2001901 are not correct. Both TPs imply that IAB-MT and IAB-DU share the same interface, which may not be the case. This should be taken into account in the revision. |
| Qualcomm | More comments in ad-hoc table below |
| Huawei | Sub topic 2-1: Does an IAB DU talk to a UE? Or is a BS while it is doing this?  Sub topic 2-2:R4-2001888 has some confusion with IAB-DU/MT as a function and as a NW node? This is perhaps the problem with using same abbreviations for both? The HW node is what the HW requirements are applied to.  Sub topic 2-3: R4-2001887 – we will not have 1-C, this is not clear, is legacy a good word to use (we tried to avoid it in past) |

### CRs/TPs comments collection

*Major close to finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2001902 | Qualcomm: it seems ok to us |
| Huawei: Does a IAB-DU talk to a UE or I this a BS? |
|  |
| R4-2002044 | Qualcomm: More discussion needed on Section 4.4.1 and 4.4.2. Section 4.4.2 may need to be reviewed based on outcome of discussion on MT classes. |
| Company B |
|  |
| R4-2001901 | Qualcomm: it seems ok to us |
| R4-2001887 | Qualcomm: Quote from the contribution: *“… As the reference points are same for IAB DU and IAB MT, there is no need to further differentiate the type of IAB MT and IAB DU separately, hence only IAB type will be specified.”.*  It seems the proposed methodology would work well for a shared architecture. How will the testing work for a non-shared architecture that has separate hardware for MT and DU? Why are we excluding the possibility of having different reference points for IAB-MT and IAB-DU?  Huawei: 1-C is valid for BS but not for IAB – this is perhaps not clear. The word legacy has been avoided in the past. |
| R4-2001888 | Qualcomm: we prefer to refer to IAB as *network node* rather than “*evolved base station*”.  Huawei: Some issues with function vs HW node, definitions should be in definition clause. Maybe they are not definitions, the wording whilst the intention is correct is perhaps not good to put in TR like this. |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic#2-1** | *Tentative agreements:* A number of questions on the definitions and proposal that all IAB definitions are agreed as a package. As well as opinion we do not need these definitions yet.  *Candidate options:*  *Recommendations for 2nd round:* As the definitions use terms that are themselves not yet defined it seems too premature to agree them, WF for defining IAB terms could be drafted attempting to define terms as a package before capturing as TP. Include channel BW definitions from sub topic 3-3 |
| **Sub-topic#2-2** | *Tentative agreements:* 2004: This sub-topic deals with relation with other specification clauses. Its clear more understanding of how test specifications are handled is needed before agreeing subclause 4.2. Subclause 4.1 is an introduction based on 38.104 and seems agreeable.  1888: there are comments on the text but as TR text there may be some agreeable background here  *Candidate options:*  *Recommendations for 2nd round:* Revise R4-2001888 for 2nd round taking into account comments. |
| **Sub-topic#2-3** | *Tentative agreements:* Some corrections suggested to subclause 4.3, concerning the 8 TRX limit not applicable to IAB-MT also to avoid any implication IAB-DU and IAB-MT share the same interface*.*  *1887:* may be possible to find some agreement on table.  *Candidate options:* 2044 has a couple of sections which may be useful so suggest reworking subclause 4.3 within this TP.  *Recommendations for 2nd round:* Capture comments and revise subclause 4.3 in revision of R4-2002044  Revise R4-2001887 |
| **Sub-topic#2-4** | *For info only discussed in topic area #82* |

*Suggestion on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
| #1 | WF on IAB definitions | Ericsson |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2001902 | *Noted – follow up definition in WF* |
| R4-2002044 | Revise as follows:  Subclause 4.1 ok  Subclause 4.2 remove  Subclause 4.3 revise base on comments  Subclause 4.4: remove (deal with in classes discussion) |
| R4-2001901 | Noted : merge with revision of 2044 |
| **R4-2001852** | **APPLOGIES this was missed from the ROUND 1 list of sub-topics – please comment on in round 2.** |
| R4-2001887 | Revise : attempt to correct based on comments |
| R4-2001888 | Revise : attempt to correct based on comments |

## Discussion on 2nd round (if applicable)

Discussion was carried out by commenting the WF and revised documents

R4-2002485 –*WF on IAB definition,* background and agreement on channel BW names. Revised after several comments.

R4-2002486 - revision of R4-2002444, no comments

R4-2002487 – revision of R4-2001887 – no comments

R4-2002488 – revision of R4-2001888 – no comments

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2002485 | *Agreeable* |
| R4-2002486 | *Agreeable* |
| R4-2002487 | *Agreeable* |
| R4-2002488 | *Agreeable* |

# Topic #2: TS Drafting - Operating bands and channel arrangement (clause 5)

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2000824 | Huawei Technologies Co.,Ltd. | FR1 IAB frequency band  **Proposal:** IAB node should support band n77 and n78 |
| R4-2000974 | ZTE | Discussion on IAB MT channel bandwidth  **Proposal:** send one clarification LS to RAN2 on declaration of IAB MT supported channel bandwidth. |
| R4-2000275 | Samsung | TP for TS38.174, clause 5, IAB system parameters |
| R4-2002045 | Huawei | TP to TS 38.174, clause 5, Operating bands and channel arrangement |
| R4-2001186 | Ericsson | On multicarrier and CA for IAB  **Observation 1:** It is possible that the IAB-MT and IAB-DU may operate on different carriers/bands simultaneously.  **Observation 2:** In case the IAB-DU and IAB-MT are implemented on the same radio hardware, it would be desirable to have a single set of RF and demodulation requirements for CA/multi-carrier.  **Observation 3:** The IAB specification should be forward compatible considering simultaneous TX/RX. The specifications should not preclude that for rel-17 the same panel may simultaneously transmit/receive IAB-MT CA and IAB-DU CA or multicarrier, and so should set requirements accordingly.  **Observation 4:** There is no need for the IAB-MT specification to preclude using CA combinations that are not defined for UEs (at least for the “wide area / planned” class).  **Observation 5:** If the BS approach to CA and multicarrier requirements is adopted, then there is no need to make a list of CA / multicarrier combinations in the IAB specification.  **Proposal 1:** For the “wide area/planned” IAB class, CA and multi-carrier requirements use the BS approach  **Proposal 2:** RAN4 should discuss and conclude whether the BS approach is also feasible for the “local area / unplanned” IAB class |

## Open issues summary

A proposal to add band n77 and n78 to the FR1 operating bands list

A proposal to send a clarification LS to RAN2

2 contributions which import and update text describing the operating bands and channel arrangement.

### Sub-topic 3-1 -Adding bands n77 and n78

Support by operators: China Telecom, China Unicom, BT plc

**Issue 3-1: Adding bands n77 and n78**

* Proposals
  + Option 1: Approve proposal
* Recommended WF
  + TBA

### Sub-topic 3-2 – Clarification LS to RAN2

Propose a clarification LS to RAN2 on declaration of IAB MT supported channel BW

**Issue 3-2: LS to RAN2**

* Proposals
  + Option 1: TBA
  + Option 2: TBA
* Recommended WF
  + TBA

### Sub-topic 3-3 – TP to TR 38.174

The 2 TP’s cover the same section, some clear differences are:

* The transformation of *BS channel bandwidth* and *UE channel bandwidth* from the donor specs has been handle differently in the 2 TP’s
* R42000275 – Uses references in 5.3.1, 5.3.2, 5.3.3, 5.3.4, 5.4 - This issue to be discussed in sub-topic 1-1

**Issue 3-3: TS text to TS 38.174 clause 5**

* Proposals
  + Revise text of one of the TP’s based on result of sub-topic 1-1
* Recommended WF
  + TBA

### Sub-topic 3-4 – Multi-carrier and CA for IAB

R4-2001186 proposes using the BS approach for multi-carrier and CA.

The proposals have some reliance on the class definitions

**Issue 3-4: Multi-carrier and CA for IAB**

* Proposals
  + Proposal-1: Only study the IAB MT and IAB DU belong to the same class scenario.
  + Proposal-2: Assume that wide area and medium range IABs are planned and local area IABs are unplanned.
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| ZTE | Sub topic 3-1: support band n77 and n78 for IAB operation  Sub topic 3-2: support to send one clarification LS back to RAN2  Sub topic 3-3: Note 2 in section 5.3.5 should be removed as this 30MHz is late request from operators from R15 I think, so it is only applied for BS side without UE side. In addition, some system parameter for intra-band contiguous CA or intra-band non-contiguous CA is different, we need to pay attention on that.  Sub topic 3-4: okay for proposal 1 and proposal 2. |
| CATT | Sub topic 3-1: we support it.  Sub topic 3-2: We discussed with our RAN2 colleague, we’re not clear what’s the understanding problem with the LS sent last meeting. Sub topic 3-4: Agree with Samsung’s comment. MT class is not decided yet. |
| Samsung | Sub topic 3-1: fine with option 1.  Sub topic 3-2: it seems the LS sent last meeting has already delivered corresponding information. Need to check RAN2 status on how to implement RAN4 LS before agree on this LS.  Sub topic 3-3: for system parameter, except IAB channel bandwidth, the reference way should be applied.  Sub topic 3-4: this relies on MT classification discussion. Need to agree on MT classification first. |
| Ericsson | Sub topic 3-1: ok with option 1.  Sub topic 3-2: LS sent last meeting by QC should cover this LS, is there anything more than last sent LS?  Sub topic 3-3: we support the revised text , not support the reference, the channel bandwidth is a little complex , that is why we define IAB DU uplink and IAB DU downlink, IAB MT uplink and IAB MT downlink.  Sub Topic 3-4: The intention of our paper here is not to discuss IAB class definition (that is in another thread), but to discuss whether the IAB should be based on multicarrier BS like requirements or the UE CA framework. We argue that at least for the large cell/planned, BS multi-carrier requirements work best. We also think that the BS/multi-carrier requirements work for the other class of IABs, but would be interested if there are other views. Here though let’s discuss how to implement multi-carrier and carrier-aggregation, not the class definition. |
| Nokia, Nokia Shanghai Bell | Sub-topic 3-3: Proposal to revise after decision in referencing has been done sounds reasonable. Here some aspects to take into account once the revision is done: In R4-2002045 the term “BS channel bandwidth” is still used in section 5.3.3 and both section 5.3A.1 and 5.3A.2 talk about transmission bandwidth configuration for CA. The benefits of using the suffix A are not clear.  In R4-2000275 the notes in definitions section are more applicable to be placed in the actual requirement section. There is typo in band n41 frequency range.    Sub-topic 3-4: It is ok to apply BS approach meaning that IAB-Node declares it CA capabilities and individual configurations are not listed in 38.174. However, it is RAN2 domain to define how the link is configured.  The class specific proposals should be decided on after the class definition in discussion #82 has a conclusion. At the moment we do not see the motivation to mandate IAB-MT and IAB-DU to be always the same class as at this point it has not been decided which classes apply to IAB-MT. This shall be discussed in the email discussion #82. In proposal-2 it is unclear if the wide area and medium range IAB refer to DU class or some potential MT class. |
| Qualcomm | Sub topic 3-1: we agree with introducing support for band n77 and n78 for IAB operation  Sub topic 3-2: we do not see the need for sending a clarification LS to RAN2 on MT channel bandwidth. The LS clearly states that “IAB-MT declares all the supported channel bandwidths rather than having a mandatory set as current UEs”. The LS does not make any reference to the currently defined IoDT bits for NR UE.  Sub topic 3-3: we agree with Samsung version (R4-2000275) of TP for clause 5  Sub topic 3-4: we believe that proposal 2 should not be discussed at this stage. Definition of IAB-MT classes should be finalized first.  We do not agree with proposal 1. It would be better to leave flexibility for declaration of IAB-MT and DU classes in the specs. |
| Huawei | Sub topic 3-1: Agree  Sub topic 3-3: We favor the approach in our TP (R4-2002045) but of course may need revisions- this issue can perhaps not be solved until we have consensus on sub-topic 1-1  Sub topic 3-4: As IAB is network node seem reasonable to take the BS approach to CA and,multi-carrier. Not sure if the concept of planned/unplanned belongs in the class definition – need to finish those discussions 1st. |

### CRs/TPs comments collection

*Major close to finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| XXX | Company A |
| Company B |
|  |
| YYY | Company A |
| Company B |
|  |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic#3-1** | *Tentative agreements:* R4-2000824 - Agreeable  *Candidate options:*  *Recommendations for 2nd round:* No action needed R4-2000824 can be approved |
| **Sub-topic#3-2** | *Tentative agreements:* Seems no consensus of the need to send further LS to RAN2  *Candidate options:*  *Recommendations for 2nd round:* Close sub-topic – no action required |
| **Sub-topic#3-3** | *Tentative agreements:* No TS text can be drafted until we have more progress on sub topic 1-1. However there is some agreement that some unique text is needed in the channel BW section. Also it seems the method on referring to IAB channel BW needs some discussion. 0275 uses on “IAB channel bandwidth” whereas 2045 uses both IAB-DU channel bandwidth and IAB-MT channel bandwidth. This issue can be further discussed  *Candidate options:*  *Recommendations for 2nd round:* Further discuss the requirements for IAB channel BW in a WF, this can be merged with the definitions WF in subclause 2.4.1 |
| **Sub-topic#3-4** | *Tentative agreements:* Class definitions are not decided yet so difficult approve the proposals as they stand. Seems agreeable that CA and multi-carrier is dealt with like a BS however. This could be captured in a WF  *Candidate options:* capture the CA and multi-carrier parts in a WF  *Recommendations for 2nd round: WF on CA and multi-carrier agreements* |

*Suggestion on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
| #1 | WF on CA and multi-carrier agreements | Ericsson |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provided recommendation on CRs/TPs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| R4-2000275 | *Noted: IAB channel BW further discussed in WF* |
| R4-2002045 | *Noted: IAB channel BW further discussed in WF* |

## Discussion on 2nd round (if applicable)

R4-2002489 - WF on CA and multi-carrier agreements, revised after comments

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2002489 | *Agreeable* |