**3GPP TSG-RAN WG4 Meeting # 99-e draftR4-2108684**

**Electronic Meeting, May. 19-27, 2021**

**Agenda item:** 6.3.6

**Source:** Moderator (Nokia, Nokia Shanghai Bell)

**Title:** Email discussion summary for [99-e][325] NR\_IAB\_Demod

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of this email discussion (e.g. list of treated agenda items) and provide some guidelines for email discussion if necessary.*

*List of candidate target of email discussion for 1st round and 2nd round*

* 1st round: TBA
* 2nd round: TBA

## Scope

This tdoc will be used to guide and summarize the email discussion for the topic of Rel-16 IAB demodulation and CSI requirements (AI 6.3.6), with the email thread identifier “[99-e][325] NR\_IAB\_Demod”.

The scope of this email discussion are Rel-16 IAB demodulation and CSI requirements, and in particular the agenda items:

6.3 Integrated Access and Backhaul for NR [NR\_IAB]

6.3.6 Demodulation and CSI requirements [NR\_IAB-Perf]

6.3.6.1 General [NR\_IAB-Perf]

6.3.6.2 IAB-DU performance requirements [NR\_IAB-Perf]

6.3.6.3 IAB-MT performance requirements [NR\_IAB-Perf]

Priority topics are marked directly in the open issues’ summaries.

## Notes on email discussions

From the meeting arrangement:

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| * Delegates are strongly encouraged to provide comments/concerns asap
	+ Silence within a reasonable timeframe means no objection
* It is strongly encouraged that each company/delegate consolidate their comments/views and send them out in one email for each email thread
* Length of file names shall be reduced, e.g.
	+ At the beginning of first round, moderators share / ftp / tsg\_ran / WG4\_Radio / TSGR4\_98\_e / Inbox / Drafts / [98e][101] NR\_NewRAT\_SysParameters\Summary\_101\_1st round\_v01.docx
	+ After update by company A: Summary\_101\_1st round\_v02\_companyA
	+ After update by company B: Summary\_101\_1st round\_v03\_companyA\_companyB
	+ After update by company C: Summary\_101\_1st round\_v04\_companyB\_companyC
 |

## Notes on completeness of this summary

Please note the guidance received by the RAN4 chair on the reflector on 2021/05/13:

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| [Xizeng]: It is encouraged for moderators to use email summary comments (initial version + revised versions) to organize the discussion, capture all the comments/responses and provide recommendations in both 1st round and 2nd round. Thus it is easy to track the progress afterwards since all the discussions are recorded in one document. Especial for the 2nd round, after the WF/LS/revised CR… are provided, delegates are encouraged to continue providing comments in the email summary document.But considering that people may be used to directly comment in the reflector for 2nd round, we do not mandate the above approach. But if the moderators think it is better, they can follow it. |

This email summary will incorporate comments received by email on the reflector on a best effort basis.
The contributors are invited to duplicate any email comments in this summary document, to order to be sure that these comments are captured.

# Topic #1: General IAB specifications (incl. all CRs)

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-20xxxxx | Company A | Proposal 1:Observation 1: |
| R4-2109208 | Intel Corporation | Title: draftCR to 38.174: IAB-MT and IAB-DU performance requirements |
| R4-2109209 | Intel Corporation | Title: TP to TS 38.176-1: FRC and PRACH test preambles |
| R4-2109210 | Intel Corporation | Title: TP to TS 38.176-2: Demodulation manufacturer declarations |
| R4-2109211 | Intel Corporation | Title: Big TP to TS 38.176-1: IAB demodulation performance requirementsReserved. |
| R4-2110537 | Huawei, HiSilicon | Title: pCR on IAB conducted conformance testing (Manufacturer declarations) to TS 38.176-1 |
| R4-2110538 | Huawei, HiSilicon | Title: pCR on IAB radiated conformance testing (FRCs and PRACH test preambles) to TS 38.176-2 |
| R4-2110722 | Ericsson | Title: pCR to 38.176-1: Introduction of annexes on test tolerance, test setup and propagation conditions for performance requirements |
| R4-2110723 | Ericsson | Title: Draft CR to 38.174: FRCs and PRACH preambles |
| R4-2110725 | Ericsson | Title: General issues for IAB specificationsRF channels to test**Proposal 1: Test only the M RF channel.**Directions for radiated testing**Proposal 2: For radiated requirements, test only in the OTA REFSENS receiver target reference direction**Measurement uncertainties and Test TolerancesObservation 1: There is no basis to compare MU/TT between UE testing and BS testing[Moderator: Moved to IAB-MT topic.]Observation 2: It may be hypothesized that a wide area IAB-MT is quite similar to a BS in architecture and will be tested in BS facilities whereas a local area IAB-MT is more like a UE in architecture and may be tested in UE like facilities. [Moderator: Moved to IAB-MT topic.]Applicability section and statements**Proposal 3: IAB-DU applicability rules are based on the BS applicability rules, adjusted where needed**[Moderator: Moved to IAB-DU topic.]**Proposal 4: No need for IAB-MT applicability rules (functionality not declared to be supported is not tested anyhow).** [Moderator: Moved to IAB-MT topic.] |
| R4-2111348 | Nokia, Nokia Shanghai Bell | Title: draftTP to TS 38.176-2 IAB-DU performance requirements and parts of DU and MT appendix |
| R4-2111396 | Nokia, Nokia Shanghai Bell | Title: bigTP draft to TS 38.176-2 Demodulation performanceReserved. |
| R4-2110717 | Ericsson | Title: Draft CR to 38.174: Introduction of IAB-DU performance requirements |
| R4-2111350 | Nokia, Nokia Shanghai Bell | Title: draftTP to TS 38.176-1 IAB-DU performance requirements |
| R4-2110539 | Huawei, HiSilicon | Title: Big CR on IAB-MT demodulation in TS 38.174Reserved. |
| R4-2110544 | Huawei, HiSilicon | Title: pCR on IAB-MT conducted conformance testing (CSI reporting and Interworking) to TS 38.176-1 |
| R4-2110545 | Huawei, HiSilicon | Title: CR on IAB-MT conducted performance requirements (General and Demodulation) in TS 38.174 |
| R4-2110546 | Huawei, HiSilicon | Title: pCR on IAB-MT radiated conformance testing (General and Demodulation) to TS 38.176-2 |
| R4-2110721 | Ericsson | Title: pCR to 38.176-2: Introduction of CSI-RS performance tests and requirements |
| R4-2110724 | Ericsson | Title: pCR to 38.176-1: IAB-MT performance tests |
| R4-2111237 | Nokia, Nokia Shanghai Bell | Title: TS 38.174 draftCR CSI reporting radiated performance requirements |
| R4-2111027 | Nokia, Nokia Shanghai Bell | Title: On IAB-MT demodulation requirementsOn editorial issues**Proposal 9: Use types following both the forms “IAB type 1-H/1-O/2-O” and “IAB-DU/MT type 1-H/1-O/2-O”, where appropriate.****Observation 8**: While preparing the CR on the IAB-MT CSI reporting requirements sections in TS 38.174 [3], we have noticed that there is a need in General section (a subsection of clause 11.2.3.2 “Performance requirements for IAB type 2-O”) to specify common test parameters for all CSI reporting tests. Therefore, there is a need for such General section in any case that can also include Applicability rules. **Proposal 10: Same as existing TS 38.101-4, create separate “general” sections for IAB-DU demodulation performance requirements, IAB-MT demodulation performance requirements, and IAB-MT CSI reporting requirements. The general section contains applicability rules for each**.  |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

*Interested companies are expected to add their views directly under the respective issues in a dialogue-like form, i.e., identical to how the chair would record views during a f2f meeting.*

*Please add further table rows as required and do not change previous comments of your company or other companies. Answering to questions from other companies is encouraged.*

### Sub-topic 1-1: Test specification specific issues

*Sub-topic description:*

*Open issues and candidate options before e-meeting:*

**Issue 1-1-1: RF channels to test**

* Proposals
	+ Option 1 (): Test only the M RF channel.
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Discuss in first round.

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| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | OK with Option1. |
| Ericsson | Also OK with option 1. |
| Nokia, Nokia Shanghai Bell | Agree with Option 1. |
| Intel | Option 1 is fine. |

**Issue 1-1-2: Directions for radiated testing**

* Proposals
	+ Option 1 (): For radiated requirements, test only in the OTA REFSENS receiver target reference direction
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Discuss in first round.

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| **Company** | **Comments** |
| XXX |  |
| Huawei | OK with Option1. |
| Ericsson | Also OK with option 1. |
| Nokia, Nokia Shanghai Bell | Agree with Option 1. |
| Intel | Option 1 is fine. |

### Sub-topic 1-2: Editorial issues

*Sub-topic description:*

*Open issues and candidate options before e-meeting:*

**Issue 1-2-1: IAB type**

* Proposals
	+ Option 1 (): Use types following both the forms “IAB type 1-H/1-O/2-O” and “IAB-DU/MT type 1-H/1-O/2-O”, where appropriate.
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Discuss in first round.

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| **Company** | **Comments** |
| XXX |  |
| Huawei | OK with Option1. |
| Ericsson | Also OK with option 1. |
| Nokia, Nokia Shanghai Bell | Agree with Option 1. |
| Intel | Option 1 is fine. |

**Issue 1-2-2: General sections in IAB-MT and IAB-DU parts**

* Proposals
	+ Option 1 (): Create separate “general” sections for IAB-DU demodulation performance requirements, IAB-MT demodulation performance requirements, and IAB-MT CSI reporting requirements. The general section contains applicability rules for each.
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Discuss in first round.

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| **Company** | **Comments** |
| XXX |  |
| Huawei | We prefer to use current structure that is already clear. We have no necessary to change it consider this is the last meeting for this WI. |
| Nokia, Nokia Shanghai Bell | General sections have two main purposes: definition of parameters common for all following test, and specification of applicability rules. In our opinion, it makes the specifications clearer if these sections are present for each of lager set of requirements: IAB-DU Demod, IAB-MT Demod, and IAB-MT CSI reporting. |
| Intel | It is better to distinguish applicability rules between IAB-MT demod and CSI reporting in separate sections (Similar to 38.101-4). Support option 1. |

**Issue 1-2-3 (NEW): Removal of parameters that are unused or left up to implementation**

* Proposals
	+ Option 1 (Huawei): Remove parameters that
		- Are not configured, such as *timeRestrictionForChannelMeasurements*, *timeRestrictionForInterferenceMeasurements*, etc.
		- Are related to aperiodic, such as *aperiodicTriggeringOffset*, *reportTriggerSize*, etc.
		- Are related to reporting details, such as CQI/RI/PMI delay etc.
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Option 1 seems to be in line with prior agreements to not capture parameters that are up to implementation.
	Please discuss and/or take the examples into account, when revising CRs.

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| **Company** | **Comments** |
| XXX |  |

**Issue 1-2-4 (NEW): Section to use for PMI FRC**

* Proposals
	+ Option 1 (Huawei): A.3.1
	+ Option 2 (Huawei): A.3.5.
* Recommended WF
	+ Please comment.

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| **Company** | **Comments** |
| XXX |  |

**Issue 1-2-5 (NEW): Notes in FRCs for CSI reporting**

* Proposals
	+ Option 1 (Huawei): Since the PBCH is left to implementation, change note2 and note3 to “PDSCH is only scheduled on slots which are full DL”.
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Please comment.

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| **Company** | **Comments** |
| XXX |  |

### Sub-topic 1-3: Other

*Sub-topic description:*

*In this sub-topic companies are invited to bring issues to the attention of the group, which have not been captured in the previous sub-topics.*

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| **Company** | **Comments** |
| XXX |  |
| Huawei | Here we raise the issues for CR drafting:1. Parameters that is “Not configured” should be removed, such as *timeRestrictionForChannelMeasurements,* *timeRestrictionForInterferenceMeasurements*, etc.2. Parameters that is related to aperiodic should be removed, such as *aperiodicTriggeringOffset*, *reportTriggerSize*, etc.3. Parameters that is related to reporting details should be removed, such as CQI/RI/PMI delay, etc.[Moderator]: Is it requested to create new issues for these three points? Or is this a comment for information?To moderator, it is issues to be aligned for CR drafting, so creating new issues is needed.Also addition issues is needed to be aligned.* The place to write for PMI FRC, in A.3.1 or A.3.5?
* For FRC for CSI reporting, considering the PBCH is left to implementation, need we change the note2 and note3 to “PDSCH is only scheduled on slots which are full DL”?
 |
| Ericsson | General comment for conformance specifications: We should consider whether to add the notes about AWGN level also in this spec if agreed for the BS specs.[Nokia] Agreed. Though we don’t think an agreement is necessary. We agreed that we base ourselves on Rel-15 with Rel-16 correction. So, if R15/16 maintenance updates the spec, those changes should be propagated (by us).[Moderator]: Is it requested to create a new issue for this comment?[Ericsson] It is not 100% clear if we have agreed to include the notes if they are introduced from the release 16 spec by default. No need to create an issue; we can include it during spec drafting (all pCR editors please note…) |

### 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.*

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| **~~CR/TP number~~** | **~~Comments collection~~** |
| ~~XXX~~ | ~~Title, Source~~ |
| ~~Company A~~ |
| ~~Company B~~ |
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| ~~R4-2109208~~ | **~~Title: draftCR to 38.174: IAB-MT and IAB-DU performance requirements, Intel.~~** |
| ~~Ericsson: IAB-DU general text refers to BS (as opposed to IAB)~~ |
| ~~[Nokia, Nokia Shanghai Bell]~~* ~~General section with Applicability Rule and Common test parameters is not present in the draftCR. Even if this section is not planned, the Common test parameters do not look to be merged with the Test parameters for testing CQI reporting (Table 8.2.3.1.1-1)~~
* ~~A note “SB, TRS, CSI-RS, and/or other unspecified test parameters with respect to TS 38.101-4 [x] are left up to test implementation, if transmitted or needed” is missing.~~
* ~~Keep “2 demodulation branches” paragraph.~~
* ~~GNSS paragraph seems to fit more nicely in test setup.~~
 |
| ~~Qualcomm: The wording for IAB-MT synchronization should explicitly include the possibility of downlink signal configuration. Suggested modified text:~~~~“The method of synchronization with the TE is left to implementation. Neither the use of downlink signal configuration nor the use of proprietary means is precluded. In tests performed with signal generators, a synchronization signal may be provided between the IAB node and the signal generator, or a common (eg, GNSS) source may be provided to both IAB node and the signal generator, to enable correct timing of the wanted signal.”~~ |
| ~~Huawei:~~* ~~In Table 8.2.3.3.1-1, FRC (Annex A) should be removed and reuse the Note in TS38.101-4 that “Measurements channels are specified in Table A.3.5-1. M-FR1-A.3.5-1 is used for Rank 1 case. M-FR1-A.3.5-2 is used for Rank 2 case. M-FR1-A.3.5-3 is used for Rank 3 case. M-FR1-A.3.5-4 is used for Rank 4 case.”~~
* ~~In Table 8.2.3.2.1-1, Measurement channel should be M-FR1-A.3.1-4 and M-FR1-A.3.1-5 for Test 1 and Test 2 respectively.~~
 |
| ~~R4-2109209~~ | **~~Title: TP to TS 38.176-1: FRC and PRACH test preambles, Intel~~** |
| ~~Ericsson: A.2.2 contents are missing~~ |
| ~~[Nokia, Nokia Shanghai Bell]~~* ~~Section A.2.2 Fixed Reference Channels for PUSCH performance requirements (16QAM, R = 434/1024) is left empty. It is present only in TS 38.176-2.~~
* ~~Why Table A.3.1-2: Fixed Reference Channels for FR1 PMI reporting (16QAM) is included in A.3.1 Fixed Reference Channels for PDSCH performance requirements (16QAM) and not in the A.3.5 Fixed Reference Channels for CSI reporting performance requirements?Another option would be to join it with the previous Table A.3.1-1: Fixed Reference Channels for FR1 PDSCH (16QAM).~~
* ~~Based on the latest approved version of big TP for 38.176 [R4-2111397], IAB-DU Reference channels are defined in section A.1 Then, some sections before Fixed Reference Channels for PUSCH performance can be expected, e.g., Fixed refence channels for reference sensitivity. Section numbering can be defined in more “flexible” way, e.g. A.1.X.~~
 |
| ~~Huawei:~~ * ~~A2.2 should be removed.~~
* ~~FR1 8Tx PMI reporting FRC is missing.~~
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| ~~R4-2109210~~ | **~~Title: TP to TS 38.176-2: Demodulation manufacturer declarations, Intel~~** |
| ~~Ericsson: RI, PMI declaration missing~~ |
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| ~~R4-2109211~~ | **~~Title: Big TP to TS 38.176-1: IAB demodulation performance requirements, Intel~~** |
| ~~Moderator: Reserved for after meeting.~~ |
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| ~~R4-2110537~~ | **~~Title: pCR on IAB conducted conformance testing (Manufacturer declarations) to TS 38.176-1, Huawei~~** |
| ~~[Nokia, Nokia Shanghai Bell]~~* ~~Adapt the manufacturer declaration, once agreement about inclusion/exclusion of such applicability rules/manufacturer declarations are reached in this meeting.~~
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| ~~R4-2110538~~ | **~~Title: pCR on IAB radiated conformance testing (FRCs and PRACH test preambles) to TS 38.176-2, Huawei~~** |
| ~~[Nokia, Nokia Shanghai Bell]~~* ~~A note in A.3.5 Fixed Reference Channels for CSI reporting Tables might be need on the need to allocate resources for CSI-RS.~~
 |
| ~~Intel:~~ * ~~• Note2 from code rate rows can be removed.~~
* ~~It is better to update name of section A.3.5 to “Fixed Reference Channels for CSI reporting performance requirements”~~
* ~~We should align text in section A.3.5 between different IAB specifications~~
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| ~~R4-2110722~~ | **~~Title: pCR to 38.176-1: Introduction of annexes on test tolerance, test setup and propagation conditions for performance requirements, Ericsson~~** |
| ~~[Nokia, Nokia Shanghai Bell]~~* ~~Concerning the alpha/beta inversion, we have also not yet been able to confirm.~~
* ~~Is the section G.1.1 “IAB-MT Receiver with 2 Rx” not required? We have added it in our TP.~~
 |
| ~~Qualcomm:~~ * ~~The wording in HARQ feedback notes is inconsistent with the corresponding wording in the text for 38.176-2 (ie, Nokia R4-2111348, pages 51-53). The wording in the Nokia document is slightly clearer.~~
* ~~The wording for IAB-MT synchronization should explicitly include the option of DL signal configuration (A suggested text is provided as a QC comment to R4-2109208 in this section.)~~
 |
| ~~Intel:~~* ~~Please update TT/MU values for IAB-MT according to the reached agreement~~
* ~~Reference in Tables C.3-1 C.3-2 should be changed from 38.104 to 38.174~~
* ~~In final version we suggest capturing highlighted references in square brackets if it is not defined at current stage.~~
* ~~Section G.2.3~~
	+ ~~To define unique section for MIMO correlation model that can be applicable for both IAB-DU and IAB-MT we can use Tx/Rx terms (e.g. R~~~~TX,~~ ~~Rx/Tx correlation matrix)~~
	+ ~~Equations for correlation models should be updated to avoid gNB/UE term. (R~~~~gNB~~ ~~->~~~~R~~~~IAB~~ ~~or R~~~~TX/RX~~~~)~~
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| ~~R4-2110723~~ | **~~Title: Draft CR to 38.174: FRCs and PRACH preambles, Ericsson~~** |
| ~~[Nokia, Nokia Shanghai Bell]~~* ~~Table A.2.1-9: Cells are formatted as TAN, instead of TAC. The CB size cells have an “unknown” character included.~~
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| ~~Huawei:~~* ~~In cover sheet, Other specs affected missing, Current version should be 16.2.0.~~
* ~~Incorrect fonts.~~
* ~~In A.2, Reference channel should be used, rather than TBS Scheme. Reference channel should be D-FR1-A.2.1-x, instead of D-FR1-A2.1-x~~
* ~~In A.3, unused FRC should be removed and renumber the left FRCs, i.e. rank 2 case in Table A.3.1-1, 50MHz/120kHz and 200MHz/120kHz case in Table A.3.1-2.~~
* ~~In Table A.3.1-2, FRC number should be in increase order.~~
* ~~In A.3.5, FRC should be sorted in the order of “FR1 -> FR2”, instead of “Table -> Table2”, also the FRC naming should be M-FRx-A.3.5-x, instead of M-A.3.5-x.~~
* ~~In Table A.3.5-1, Available RE-s should be 7590, rather than 7920.~~
* ~~In Table A.3.5-3, M-FR1-A.3.5-3 is unused.~~
* ~~In Table A.3.5-4, “FR2” should be used.~~

~~In A.3.5, RI reporting FRC missing.~~ |
| ~~Intel:~~* ~~Font should be changed from calibry to times new roman~~
* ~~Font size in Table names and text should be reduced from 11 to 10~~
* ~~Unnecessary spaces should be removed between sections~~
* ~~Section A.2.1: “The parameters for the reference measurement channels are specified in table A.2.1-4 to table A.2.1-10 for FR2 PUSCH performance requirements”. We have 9 tables in total.~~
* ~~Note2 from code rate rows can be removed.~~
* ~~It is better to align Table A.3.1-1 (FRC indices) with CRs R4-2110538 and R4-2109209 to avoid possible issues with incorrect FRC references.~~
* ~~It is better to align name of FRC tables for IAB-MT with CRs R4-2110538 and R4-2109209~~
* ~~Text in section A.3.2 has wrong style~~
* ~~Table A.3.4-1 has wrong alignment~~
* ~~(“Time domain allocation 1 symbol” can be removed from tables A.3.4-1 A.3.4-2)~~
* ~~It is better to update name of section A.3.5 to “Fixed Reference Channels for CSI reporting performance requirements”~~
* ~~We should align text in section A.3.5 between different IAB specificatinos~~
* ~~Note 2 and Note 3 should be removed from Tables A.3.5-1 and A.3.5-2.~~
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| ~~R4-2111348~~ | **~~Title: draftTP to TS 38.176-2 IAB-DU performance requirements and parts of DU and MT appendix, Nokia~~** |
| ~~Ericsson: Text in the introduction section mentions FDD operation. Subcarrier spacings rule for PUCCH not correct (8.1.1.3.3.2 contradicts 8.1.1.3.3.1). Wording on PRACH applicability not clear ("require choosing formats with different sequences ").~~ |
| ~~Qualcomm: The wording for IAB-MT synchronization should explicitly include the option of DL signal configuration (A suggested text is provided as a QC comment to R4-2109208 in this section.)~~ |
| ~~Intel:~~ * ~~Columns with cyclic prefix and fraction of max throughput can be removed from tables with performance requirements. In this case these configurations should be added to common parameters. (Please check R4-2109208)~~
* ~~Section G.2.3~~
	+ ~~To define unique section for MIMO correlation model that can be applicable for both IAB-DU and IAB-MT we can use Tx/Rx terms (e.g. R~~~~TX,~~ ~~Rx/Tx correlation matrix)~~
	+ ~~Equations for correlation models should be updated to avoid gNB/UE term. (R~~~~gNB~~ ~~->~~~~R~~~~IAB~~ ~~or R~~~~TX/RX~~~~)~~
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| ~~R4-2111396~~ | **~~Title: bigTP draft to TS 38.176-2 Demodulation performance, Nokia~~** |
| ~~Moderator: Reserved for after meeting.~~ |
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| ~~R4-2110717~~ | **~~Title: Draft CR to 38.174: Introduction of IAB-DU performance requirements, Ericsson~~** |
| ~~[Nokia, Nokia Shanghai Bell]~~* ~~Layout comments: Starting from 8.1.3.3.1.2 every second table seems to be left aligned instead of centered. According to drafting rules, heading use a “tab” after the number and not “spaces”.~~
 |
| ~~Intel:~~ * ~~Font should be changed from calibry to times new roman~~
* ~~Columns with cyclic prefix and fraction of max throughput can be removed from tables with performance requirements. In this case these configurations should be added to common parameters. (Please check R4-2109208)~~
* ~~Font size in Table names and text should be reduced from 11 to 10~~
* ~~References for transient period should be added in square brackets since not it refers to BS spec.~~
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| ~~R4-2111350~~ | **~~Title: draftTP to TS 38.176-1 IAB-DU performance requirements, Nokia~~** |
| ~~Ericsson: There is no IAB type 1-C.~~ |
| ~~Intel: Columns with cyclic prefix and fraction of max throughput can be removed from tables with performance requirements. In this case these configurations should be added to common parameters. (Please check R4-2109208)~~ |
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| ~~R4-2110539~~ | **~~Title: Big CR on IAB-MT demodulation in TS 38.174, Huawei~~** |
| ~~Moderator:~~ ~~Reserved as CR. bigCR approach requires draftCRs. Does Huawei want to request change of registration, or does moderator request revision?~~ |
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| ~~R4-2110544~~ | **~~Title: pCR on IAB-MT conducted conformance testing (CSI reporting and Interworking) to TS 38.176-1, Huawei~~** |
| ~~Ericsson: There is no need for addition of “ (for IAB type 1-H) “ in many places in the general section, since the whole section only applies to IAB type 1-H.~~ |
| ~~Intel: Why we need to create additional note in Table 8.2.3.3.4.2-2 to specify FRC? It is better to capture in a usual way as other parameters.~~ |
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| ~~R4-2110545~~ | **~~Title: CR on IAB-MT conducted performance requirements (General and Demodulation) in TS 38.174, Huawei~~** |
| ~~Ericsson: The description of the SNR in the general section refers to connectors and type 1-H, although this section is for radiated requirements. The text on applicability chould be simplified since there is only one bandwidth per SCS~~ |
| ~~Qualcomm: The wording for IAB-MT synchronization should explicitly include the option of DL signal configuration (A suggested text is provided as a QC comment to R4-2109208 in this section.)~~ |
| ~~Intel: REG bundle size values in table 8.2.2.2.1-1 refer to wrong test indices.~~ |
| ~~[Nokia, Nokia Shanghai Bell]~~~~This document is submitted as CR. However, it should be draftCR, since we use bigCR approach for NR\_IAB (see draft of R4-2107603, RAN4 Meeting Efficiency Improvements).~~ |
| ~~R4-2110546~~ | **~~Title: pCR on IAB-MT radiated conformance testing (General and Demodulation) to TS 38.176-2, Huawei~~** |
| ~~[Nokia, Nokia Shanghai Bell]~~* ~~There is an ongoing discussion in the summary, on the inclusion of a "general section". If possible, the outcome could be captured.~~
* ~~Is there a strong opinion on the inclusion of modulation format and code rate? This information seems superfluous, even though the current style matches the UE demod spec.~~
* ~~Is it planned to update the TBD SNR values, if simulations are found to be aligned this meeting?~~
 |
| ~~Qualcomm: The wording for IAB-MT synchronization should explicitly include the option of DL signal configuration (A suggested text is provided as a QC comment to R4-2109208 in this section.)~~ |
| ~~Intel: REG bundle size values in table 8.2.2.1.4.2-1refer to wrong test indices.~~ |
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| ~~R4-2110721~~ | **~~Title: pCR to 38.176-2: Introduction of CSI-RS performance tests and requirements, Ericsson.~~** |
| ~~[Nokia, Nokia Shanghai Bell]~~* ~~Adapt the reference to test applicability rules, once agreement about inclusion/exclusion of such applicability rules/manufacturer declarations are reached in this meeting.~~
* ~~If we reach agreement on the RI/PMI configuration in this meeting, it would be good to update.~~
 |
| ~~Intel:~~* ~~Font should be changed from calibry to times new roman~~
* ~~Font size in Table names and text should be reduced from 11 to 10~~
 |
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| ~~R4-2110724~~ | **~~Title: pCR to 38.176-1: IAB-MT performance tests, Ericsson.~~** |
| ~~[Nokia, Nokia Shanghai Bell]~~* ~~Adapt the reference to test applicability rules, once agreement about inclusion/exclusion of such applicability rules/manufacturer declarations are reached in this meeting.~~
* ~~Should we keep re-simulated values as TBD, in [], or fill them in directly following the newest simulation summary? For sure the “TBC” marked values will need revision in this meeting.~~
 |
| ~~Qualcomm: Add a note on IAB-MT synchronization in the General section for consistency with the text for 38.176-2 (ie, Huawei R4-2110546, page 2, general section).~~ |
| ~~Intel:~~* ~~Font should be changed from calibry to times new roman~~
* ~~Font size in Table names and text should be reduced from 11 to 10~~
* ~~PDSCH sections with 2Rx should be removed.~~
* ~~PDCCH requirements for 1Tx and 2Tx can be combined to single section since number of requirements is not so big.~~
 |
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| ~~R4-2111237~~ | **~~Title: TS 38.174 draftCR CSI reporting radiated performance requirements, Nokia~~** |
| ~~Huawei: In Table 11.2.3.2.4.1-1, measurement channels should be stated in the note since the rank is variable.~~ |
| ~~Intel: To Huawei – why it is not work? We have dedicated FRC for each test.~~ |
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[Moderator] Please continue discussing the second-round section of this document.
The above text has been directly copy pasted in the second-round section and has been stricken through here to avoid commenting in the wrong section.

## 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.*

|  |  |
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|  | **Status summary**  |
| **Sub-topic#1** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |
| **Sub-topic 1-1** | **Sub-topic 1-1: Test specification specific issues**Issue 1-1-1: RF channels to test*Tentative agreements:*Test only the M RF channel.*Candidate options:*None*Recommendations for 2nd round:*No counter opinions voiced in first round.Tentative agreement is agreeable.Issue 1-1-2: Directions for radiated testing*Tentative agreements:*For radiated requirements, test only in the OTA REFSENS receiver target reference direction.*Candidate options:*None*Recommendations for 2nd round:*No counter opinions voiced in first round.Tentative agreement is agreeable. |
| **Sub-topic 1-2** | **Sub-topic 1-2: Editorial issues**Issue 1-2-1: IAB type*Tentative agreements:*Use types following both the forms “IAB type 1-H/1-O/2-O” and “IAB-DU/MT type 1-H/1-O/2-O”, where appropriate.*Candidate options:*None*Recommendations for 2nd round:*No counter opinions voiced in first round.Tentative agreement is agreeable.Issue 1-2-2: General sections in IAB-MT and IAB-DU parts*Tentative agreements:*None*Candidate options:** Option 1: Create separate “general” sections for IAB-DU demodulation performance requirements, IAB-MT demodulation performance requirements, and IAB-MT CSI reporting requirements. The general section contains applicability rules for each.
* Option 2: Use current structure.

*Recommendations for 2nd round:*Continue discussion in the second round.Is tangentially connected to the WF on IAB-MT applicability rules drafting.Issue 1-2-3 (NEW): Removal of parameters that are unused or left up to implementation *Tentative agreements:*None*Candidate options:** Option 1: Remove parameters that
	+ Are not configured, such as *timeRestrictionForChannelMeasurements*, *timeRestrictionForInterferenceMeasurements*, etc.
	+ Are related to aperiodic, such as *aperiodicTriggeringOffset*, *reportTriggerSize*, etc.
	+ Are related to reporting details, such as CQI/RI/PMI delay etc.
* Option 2: Other options not precluded.

*Recommendations for 2nd round:*New issue requested in the first week.Start discussion in the second round.Issue 1-2-4 (NEW): Section to use for PMI FRC*Tentative agreements:*None*Candidate options:** Option 1: A.3.1
* Option 2: A.3.5.

*Recommendations for 2nd round:*New issue requested in the first week.Start discussion in the second round.Issue 1-2-5 (NEW): Notes in FRCs for CSI reporting*Tentative agreements:*None*Candidate options:** Option 1 (Huawei): Since the PBCH is left to implementation, change note2 and note3 to “PDSCH is only scheduled on slots which are full DL”.
* Option 2: Other options not precluded.

*Recommendations for 2nd round:*New issue requested in the first week.Start discussion in the second round. |

*Recommendations on WF/LS assignment*

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|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 |  |  |
| #1 | Way forward on IAB-MT applicability rules drafting in conformance specifications | Intel Corporation |
| #2 | WF on Rel-16 NR IAB demodulation requirements | Nokia, Nokia Shanghai Bell |

### CRs/TPs

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

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

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| **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”* |
| See section 4.1. | **See section 4.1.** |

## Discussion on 2nd round (if applicable)

~~This section will be prepared for the 2~~~~nd~~ ~~round summary and sent out before 3 am UTC on Monday.~~

### Sub-topic 1-1: (2nd) Test specification specific issues

No remaining issues at the start of 2nd round.

### Sub-topic 1-2: (2nd) Editorial issues

Issue 1-2-2: General sections in IAB-MT and IAB-DU parts

*Candidate options:*

* Option 1: Create separate “general” sections for IAB-DU demodulation performance requirements, IAB-MT demodulation performance requirements, and IAB-MT CSI reporting requirements. The general section contains applicability rules for each.
* Option 2: Use current structure.

*Recommendations for 2nd round:*

Continue discussion in the second round.
Is tangentially connected to the WF on IAB-MT applicability rules drafting.

Contributor Comments:
(Dialog; please do not modify earlier comments; add follow-up always at the bottom of the discussion.)

[XXX]:

Issue 1-2-3 (NEW): Removal of parameters that are unused or left up to implementation

*Candidate options:*

* Option 1: Remove parameters that
	+ Are not configured, such as *timeRestrictionForChannelMeasurements*, *timeRestrictionForInterferenceMeasurements*, etc.
	+ Are related to aperiodic, such as *aperiodicTriggeringOffset*, *reportTriggerSize*, etc.
	+ Are related to reporting details, such as CQI/RI/PMI delay etc.
* Option 2: Other options not precluded.

*Recommendations for 2nd round:*

New issue requested in the first week.
Start discussion in the second round.

Contributor Comments:
(Dialog; please do not modify earlier comments; add follow-up always at the bottom of the discussion.)

[XXX]:

Issue 1-2-4 (NEW): Section to use for PMI FRC

*Candidate options:*

* Option 1: A.3.1
* Option 2: A.3.5.

*Recommendations for 2nd round:*

New issue requested in the first week.
Start discussion in the second round.

Contributor Comments:
(Dialog; please do not modify earlier comments; add follow-up always at the bottom of the discussion.)

[Intel]: We are fine to capture PMI FRC in section A.3.5.

Issue 1-2-5 (NEW): Notes in FRCs for CSI reporting

*Tentative agreements:*

None

*Candidate options:*

* Option 1 (Huawei): Since the PBCH is left to implementation, change note2 and note3 to “PDSCH is only scheduled on slots which are full DL”.
* Option 2: Other options not precluded.

*Recommendations for 2nd round:*

New issue requested in the first week.
Start discussion in the second round.

Contributor Comments:
(Dialog; please do not modify earlier comments; add follow-up always at the bottom of the discussion.)

[XXX]:

### (2nd) CRs/TPs comments collection

All submitted TPs were recommended to be revised in the first round (except for bigCR/bigTP).
Please find hereunder a copy paste of all the 1st round comments, so we can continue discussion directly.

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| **CR/TP number** | **Comments collection** |
| R4-2109208 > R4-2108606 | **Title: draftCR to 38.174: IAB-MT and IAB-DU performance requirements, Intel.** |
| Ericsson: IAB-DU general text refers to BS (as opposed to IAB) |
| [Nokia, Nokia Shanghai Bell]* General section with Applicability Rule and Common test parameters is not present in the draftCR. Even if this section is not planned, the Common test parameters do not look to be merged with the Test parameters for testing CQI reporting (Table 8.2.3.1.1-1)
* A note “SB, TRS, CSI-RS, and/or other unspecified test parameters with respect to TS 38.101-4 [x] are left up to test implementation, if transmitted or needed” is missing.
* Keep “2 demodulation branches” paragraph.
* GNSS paragraph seems to fit more nicely in test setup.
 |
| Qualcomm: The wording for IAB-MT synchronization should explicitly include the possibility of downlink signal configuration. Suggested modified text:“The method of synchronization with the TE is left to implementation. Neither the use of downlink signal configuration nor the use of proprietary means is precluded. In tests performed with signal generators, a synchronization signal may be provided between the IAB node and the signal generator, or a common (eg, GNSS) source may be provided to both IAB node and the signal generator, to enable correct timing of the wanted signal.” |
| Huawei:* In Table 8.2.3.3.1-1, FRC (Annex A) should be removed and reuse the Note in TS38.101-4 that “Measurements channels are specified in Table A.3.5-1. M-FR1-A.3.5-1 is used for Rank 1 case. M-FR1-A.3.5-2 is used for Rank 2 case. M-FR1-A.3.5-3 is used for Rank 3 case. M-FR1-A.3.5-4 is used for Rank 4 case.”
* In Table 8.2.3.2.1-1, Measurement channel should be M-FR1-A.3.1-4 and M-FR1-A.3.1-5 for Test 1 and Test 2 respectively.
 |
| Intel: In revised draftCR we have addressed all comments. |
| Huawei: Our preference for the wording for IAB-MT synchronization is that

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| In tests performed with signal generators, a synchronization signal may be provided between the IAB node and the signal generator, or a common (e.g., GNSS) source may be provided to both IAB node and the signal generator, to enable correct timing of the wanted signal. Other proprietary means or downlink signal configuration is not precluded. |

 |
| R4-2109209 > R4-2108607 | **Title: TP to TS 38.176-1: FRC and PRACH test preambles, Intel** |
| Ericsson: A.2.2 contents are missing |
| [Nokia, Nokia Shanghai Bell]* Section A.2.2 Fixed Reference Channels for PUSCH performance requirements (16QAM, R = 434/1024) is left empty. It is present only in TS 38.176-2.
* Why Table A.3.1-2: Fixed Reference Channels for FR1 PMI reporting (16QAM) is included in A.3.1 Fixed Reference Channels for PDSCH performance requirements (16QAM) and not in the A.3.5 Fixed Reference Channels for CSI reporting performance requirements?Another option would be to join it with the previous Table A.3.1-1: Fixed Reference Channels for FR1 PDSCH (16QAM).
* Based on the latest approved version of big TP for 38.176 [R4-2111397], IAB-DU Reference channels are defined in section A.1 Then, some sections before Fixed Reference Channels for PUSCH performance can be expected, e.g., Fixed refence channels for reference sensitivity. Section numbering can be defined in more “flexible” way, e.g. A.1.X.
 |
| Huawei: * A2.2 should be removed.
* FR1 8Tx PMI reporting FRC is missing.
 |
| Intel: In revised TP we have addressed all comments. |
| R4-2109210 > R4-2108605 | **Title: TP to TS 38.176-2: Demodulation manufacturer declarations, Intel** |
| Ericsson: RI, PMI declaration missing |
| Intel: RI, PMI declaration is added |
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| R4-2109211 | **Title: Big TP to TS 38.176-1: IAB demodulation performance requirements, Intel** |
| Moderator: Reserved for after meeting. |
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| R4-2110537 > R4-2108590 | **Title: pCR on IAB conducted conformance testing (Manufacturer declarations) to TS 38.176-1, Huawei** |
| [Nokia, Nokia Shanghai Bell]* Adapt the manufacturer declaration, once agreement about inclusion/exclusion of such applicability rules/manufacturer declarations are reached in this meeting.
 |
| Huawei: We have update the manufacture declaration list, adding the declaration items to align with the RAN1/2 features list. |
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| R4-2110538 > R4-2108591 | **Title: pCR on IAB radiated conformance testing (FRCs and PRACH test preambles) to TS 38.176-2, Huawei** |
| [Nokia, Nokia Shanghai Bell]* A note in A.3.5 Fixed Reference Channels for CSI reporting Tables might be need on the need to allocate resources for CSI-RS.
 |
| Intel: * • Note2 from code rate rows can be removed.
* It is better to update name of section A.3.5 to “Fixed Reference Channels for CSI reporting performance requirements”
* We should align text in section A.3.5 between different IAB specifications
 |
| Huawei:To Nokia: The note is under discussion in Issue 1-2-5, we has update and will further update the note if the agreements achieved.To Intel:* The wording of “Note 2” has been removed.
* The title has been updated. It is needed to be aligned for different specifications, using “CSI reporting performance requirements” or “CSI reporting requirements”.

The note is under discussion in Issue 1-2-5, we has update and will further update the note if the agreements achieved. |
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| R4-2110722 > R4-2108592 | **Title: pCR to 38.176-1: Introduction of annexes on test tolerance, test setup and propagation conditions for performance requirements, Ericsson** |
| [Nokia, Nokia Shanghai Bell]* Concerning the alpha/beta inversion, we have also not yet been able to confirm.
* Is the section G.1.1 “IAB-MT Receiver with 2 Rx” not required? We have added it in our TP.
 |
| Qualcomm: * The wording in HARQ feedback notes is inconsistent with the corresponding wording in the text for 38.176-2 (ie, Nokia R4-2111348, pages 51-53). The wording in the Nokia document is slightly clearer.
* The wording for IAB-MT synchronization should explicitly include the option of DL signal configuration (A suggested text is provided as a QC comment to R4-2109208 in this section.)
 |
| Intel:* Please update TT/MU values for IAB-MT according to the reached agreement
* Reference in Tables C.3-1 C.3-2 should be changed from 38.104 to 38.174
* In final version we suggest capturing highlighted references in square brackets if it is not defined at current stage.
* Section G.2.3
	+ To define unique section for MIMO correlation model that can be applicable for both IAB-DU and IAB-MT we can use Tx/Rx terms (e.g. RTX, Rx/Tx correlation matrix)
	+ Equations for correlation models should be updated to avoid gNB/UE term. (RgNB ->RIAB or RTX/RX)
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| R4-2110723 > R4-2108593 | **Title: Draft CR to 38.174: FRCs and PRACH preambles, Ericsson** |
| [Nokia, Nokia Shanghai Bell]* Table A.2.1-9: Cells are formatted as TAN, instead of TAC. The CB size cells have an “unknown” character included.
 |
| Huawei:* In cover sheet, Other specs affected missing, Current version should be 16.2.0.
* Incorrect fonts.
* In A.2, Reference channel should be used, rather than TBS Scheme. Reference channel should be D-FR1-A.2.1-x, instead of D-FR1-A2.1-x
* In A.3, unused FRC should be removed and renumber the left FRCs, i.e. rank 2 case in Table A.3.1-1, 50MHz/120kHz and 200MHz/120kHz case in Table A.3.1-2.
* In Table A.3.1-2, FRC number should be in increase order.
* In A.3.5, FRC should be sorted in the order of “FR1 -> FR2”, instead of “Table -> Table2”, also the FRC naming should be M-FRx-A.3.5-x, instead of M-A.3.5-x.
* In Table A.3.5-1, Available RE-s should be 7590, rather than 7920.
* In Table A.3.5-3, M-FR1-A.3.5-3 is unused.
* In Table A.3.5-4, “FR2” should be used.

In A.3.5, RI reporting FRC missing. |
| Intel:* Font should be changed from calibry to times new roman
* Font size in Table names and text should be reduced from 11 to 10
* Unnecessary spaces should be removed between sections
* Section A.2.1: “The parameters for the reference measurement channels are specified in table A.2.1-4 to table A.2.1-10 for FR2 PUSCH performance requirements”. We have 9 tables in total.
* Note2 from code rate rows can be removed.
* It is better to align Table A.3.1-1 (FRC indices) with CRs R4-2110538 and R4-2109209 to avoid possible issues with incorrect FRC references.
* It is better to align name of FRC tables for IAB-MT with CRs R4-2110538 and R4-2109209
* Text in section A.3.2 has wrong style
* Table A.3.4-1 has wrong alignment
* (“Time domain allocation 1 symbol” can be removed from tables A.3.4-1 A.3.4-2)
* It is better to update name of section A.3.5 to “Fixed Reference Channels for CSI reporting performance requirements”
* We should align text in section A.3.5 between different IAB specificatinos
* Note 2 and Note 3 should be removed from Tables A.3.5-1 and A.3.5-2.
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| R4-2111348 > R4-2108594 | **Title: draftTP to TS 38.176-2 IAB-DU performance requirements and parts of DU and MT appendix, Nokia** |
| Ericsson: Text in the introduction section mentions FDD operation. Subcarrier spacings rule for PUCCH not correct (8.1.1.3.3.2 contradicts 8.1.1.3.3.1). Wording on PRACH applicability not clear ("require choosing formats with different sequences "). |
| Qualcomm: The wording for IAB-MT synchronization should explicitly include the option of DL signal configuration (A suggested text is provided as a QC comment to R4-2109208 in this section.) |
| Intel: * Columns with cyclic prefix and fraction of max throughput can be removed from tables with performance requirements. In this case these configurations should be added to common parameters. (Please check R4-2109208)
* Section G.2.3
	+ To define unique section for MIMO correlation model that can be applicable for both IAB-DU and IAB-MT we can use Tx/Rx terms (e.g. RTX, Rx/Tx correlation matrix)
	+ Equations for correlation models should be updated to avoid gNB/UE term. (RgNB ->RIAB or RTX/RX)
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| R4-2111396 | **Title: bigTP draft to TS 38.176-2 Demodulation performance, Nokia** |
| Moderator: Reserved for after meeting. |
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| R4-2110717 > R4-2108595 | **Title: Draft CR to 38.174: Introduction of IAB-DU performance requirements, Ericsson** |
| [Nokia, Nokia Shanghai Bell]* Layout comments: Starting from 8.1.3.3.1.2 every second table seems to be left aligned instead of centered. According to drafting rules, heading use a “tab” after the number and not “spaces”.
 |
| Intel: * Font should be changed from calibry to times new roman
* Columns with cyclic prefix and fraction of max throughput can be removed from tables with performance requirements. In this case these configurations should be added to common parameters. (Please check R4-2109208)
* Font size in Table names and text should be reduced from 11 to 10
* References for transient period should be added in square brackets since not it refers to BS spec.
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| R4-2111350 > R4-2108596 | **Title: draftTP to TS 38.176-1 IAB-DU performance requirements, Nokia** |
| Ericsson: There is no IAB type 1-C. |
| Intel: Columns with cyclic prefix and fraction of max throughput can be removed from tables with performance requirements. In this case these configurations should be added to common parameters. (Please check R4-2109208) |
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| R4-2110539 > R4-2108604 | **Title: Big CR on IAB-MT demodulation in TS 38.174, Huawei** |
| Moderator: Reserved as CR. bigCR approach requires draftCRs. Does Huawei want to request change of registration, or does moderator request revision?In the moderators understanding of the details of big draft CR approach [R4-2016602, slide 6] a big draftCR might still be required for now instead of a big CR. Withdraw and Reallocate as draftCR, or ok? |
| Huawei: For our understanding, it is the last meeting for this WI so big CR should be used rather than big draft CR.

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| *Towards the end of the WI, formal CRs will be provided by the sourcing company of big Draft CR* |

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| R4-2110544 > R4-2108597 | **Title: pCR on IAB-MT conducted conformance testing (CSI reporting and Interworking) to TS 38.176-1, Huawei** |
| Ericsson: There is no need for addition of “ (for IAB type 1-H) “ in many places in the general section, since the whole section only applies to IAB type 1-H. |
| Intel: Why we need to create additional note in Table 8.2.3.3.4.2-2 to specify FRC? It is better to capture in a usual way as other parameters. |
| Huawei: To Ericsson: The wording of “for IAB type 1-H” has been removed.To Intel: The method is reuse from TS 38.101-4. Variable rank is used in RI testing while the FRC is with the fixed rank, so we cannot describe “follow RI” test using FRC. |
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| ~~R4-2110545~~ (withdrawn)Newly allocated:R4-2108598 | **Title: draftCR on IAB-MT conducted performance requirements (General and Demodulation) in TS 38.174, Huawei** |
| Ericsson: The description of the SNR in the general section refers to connectors and type 1-H, although this section is for radiated requirements. The text on applicability should be simplified since there is only one bandwidth per SCS |
| Qualcomm: The wording for IAB-MT synchronization should explicitly include the option of DL signal configuration (A suggested text is provided as a QC comment to R4-2109208 in this section.) |
| Intel: REG bundle size values in table 8.2.2.2.1-1 refer to wrong test indices. |
| [Nokia, Nokia Shanghai Bell]This document is submitted as CR. However, it should be draftCR, since we use bigCR approach for NR\_IAB (see draft of R4-2107603, RAN4 Meeting Efficiency Improvements). |
| Huawei:To Ericsson: We are not sure the comment is for us. This section is for conducted test and there is no applicability rules in this CR.To Qualcomm: We have update the wording, our preference is that

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| In tests performed with signal generators, a synchronization signal may be provided between the IAB node and the signal generator, or a common (e.g., GNSS) source may be provided to both IAB node and the signal generator, to enable correct timing of the wanted signal. Other proprietary means or downlink signal configuration is not precluded. |

To Intel: The value has been updated.To Nokia: Thanks for correction, we have update the coversheet correspondingly.Also following the comments from R4-2110546, the column of “code rate” has been removed. However, we should make it align for all companies. |
| R4-2110546 > R4-2108599 | **Title: pCR on IAB-MT radiated conformance testing (General and Demodulation) to TS 38.176-2, Huawei** |
| [Nokia, Nokia Shanghai Bell]* There is an ongoing discussion in the summary, on the inclusion of a "general section". If possible, the outcome could be captured.
* Is there a strong opinion on the inclusion of modulation format and code rate? This information seems superfluous, even though the current style matches the UE demod spec.
* Is it planned to update the TBD SNR values, if simulations are found to be aligned this meeting?
 |
| Qualcomm: The wording for IAB-MT synchronization should explicitly include the option of DL signal configuration (A suggested text is provided as a QC comment to R4-2109208 in this section.) |
| Intel: REG bundle size values in table 8.2.2.1.4.2-1refer to wrong test indices. |
| Huawei: To Nokia:* We will update the section structure after we achieve agreements for this issue.
* The column of “code rate” has been removed. However, we should make it align for all companies.
* We have updated the TBD values as per the latest simulation results provided by companies.

To Qualcomm: We have update the wording, our preference is that

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| In tests performed with signal generators, a synchronization signal may be provided between the IAB node and the signal generator, or a common (e.g., GNSS) source may be provided to both IAB node and the signal generator, to enable correct timing of the wanted signal. Other proprietary means or downlink signal configuration is not precluded. |

To Intel: The value has been updated. |
| R4-2110721 > R4-2108600 | **Title: pCR to 38.176-2: Introduction of CSI-RS performance tests and requirements, Ericsson.** |
| [Nokia, Nokia Shanghai Bell]* Adapt the reference to test applicability rules, once agreement about inclusion/exclusion of such applicability rules/manufacturer declarations are reached in this meeting.
* If we reach agreement on the RI/PMI configuration in this meeting, it would be good to update.
 |
| Intel:* Font should be changed from calibry to times new roman
* Font size in Table names and text should be reduced from 11 to 10
 |
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| R4-2110724 > R4-2108601 | **Title: pCR to 38.176-1: IAB-MT performance tests, Ericsson.** |
| [Nokia, Nokia Shanghai Bell]* Adapt the reference to test applicability rules, once agreement about inclusion/exclusion of such applicability rules/manufacturer declarations are reached in this meeting.
* Should we keep re-simulated values as TBD, in [], or fill them in directly following the newest simulation summary? For sure the “TBC” marked values will need revision in this meeting.
 |
| Qualcomm: Add a note on IAB-MT synchronization in the General section for consistency with the text for 38.176-2 (ie, Huawei R4-2110546, page 2, general section). |
| Intel:* Font should be changed from calibry to times new roman
* Font size in Table names and text should be reduced from 11 to 10
* PDSCH sections with 2Rx should be removed.
* PDCCH requirements for 1Tx and 2Tx can be combined to single section since number of requirements is not so big.
 |
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| R4-2111237 > R4-2108602 | **Title: TS 38.174 draftCR CSI reporting radiated performance requirements, Nokia** |
| Huawei: In Table 11.2.3.2.4.1-1, measurement channels should be stated in the note since the rank is variable. |
| Intel: To Huawei – why it is not work? We have dedicated FRC for each test. |
| Huawei: To Intel: The method is reuse from TS 38.101-4. Variable rank is used in RI testing while the FRC is with the fixed rank, so we cannot describe “follow RI” test using FRC. |
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## Summary on 2nd round

*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”* |
|  |  |

# Topic #2: IAB-DU

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2110725 | Ericsson | Title: General issues for IAB specificationsApplicability section and statements**Proposal 3: IAB-DU applicability rules are based on the BS applicability rules, adjusted where needed** |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

*Interested companies are expected to add their views directly under the respective issues in a dialogue-like form, i.e., identical to how the chair would record views during a f2f meeting.*

*Please add further table rows as required and do not change previous comments of your company or other companies. Answering to questions from other companies is encouraged.*

### Sub-topic 2-1: Applicability rules

*Sub-topic description:*

*In this sub-topic companies are invited to bring issues to the attention of the group, which have not been captured in the previous sub-topics.*

**Issue 2-1-1: General applicability rules**

* Prior agreements
	+ [R4-2106172] IAB-DU - PRACH
		- Test applicability
			* All existing requirements and applicability rules for PRACH should be re-used for IAB-DU and corresponding declaration on supporting of this feature should be defined. The following new one applicability rule should be added:
			“For IAB-DU declares to support more than one PRACH formats, limit the number of tests to any two cases chosen by the manufacturer. If IAB-DU declares to support more than one PRACH formats where formats for both long and short PRACH sequences
	+ [R4-2017673] General requirement scope
		- Applicability rule re-use
			* Check and adapt the BS applicability rules to reduce the number of tests.
			For example, test only the highest number of supported antennas.
	+ [R4-2017673] Channel agnostic - Details of BS requirement re-use
		- General SCS/CBW combinations
			* Keep existing full set of requirements, w.r.t. SCS/CBW combination.
			Test applicability rules can be updated, to reduce to number of tests required.
* Proposals
	+ Option 1 (): IAB-DU applicability rules are based on the BS applicability rules, adjusted where needed.
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Discuss in first round.
	The previous agreement in [R4-2017673] “General requirement scope” leads the moderator to believe that option 1 is prior agreement, or at least common understanding.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | We prefer to keep previous agreements and no need to discuss this issue. |
| Ericsson | We think that option 1 together with previous agreements is clear. |
| Nokia, Nokia Shanghai Bell | There were several agreements on IAB-DU Demod that introduced changes in the existing BS applicability rules, e.g., “highest modulation order is tested only with lowest supported SCS and other modulation orders only with highest supported SCS” for PUSCH and already mentioned above applicability rule for PRACH. Hence, Option 1 is a common understanding. |

### Sub-topic 2-2: Other

*Sub-topic description:*

*In this sub-topic companies are invited to bring issues to the attention of the group, which have not been captured in the previous sub-topics.*

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |

### 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 | Title, Source |
| Company A |
| Company B |
|  |
| **None, see topic#1.** |  |
|  |
|  |
|  |

## 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** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |
| **Sub-topic 2-1** | **Sub-topic 2-1: Applicability rules**Issue 2-1-1: General applicability rules*Tentative agreements:*None*Candidate options:*None*Recommendations for 2nd round:*All discussing entities state that it is common understanding that IAB-DU applicability rules are based on the BS applicability rules and adjusted where needed.A majority of discussing entities proposes to not discuss this topic any further.The moderator recommends to not make an agreement on this matter.However, the above statement captures the common understanding for use in CR drafting. |

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 |  |  |
| **None** |  |  |

### CRs/TPs

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

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

|  |  |
| --- | --- |
| **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”* |
| **None** |  |

## Discussion on 2nd round

~~This section will be prepared for the 2~~~~nd~~ ~~round summary and sent out before 3 am UTC on Monday.~~

### Sub-topic 2-1: (2nd) Applicability rules

No remaining issues at the start of 2nd round.

## 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”* |
|  |  |

# Topic #3: IAB-MT

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2110725 | Ericsson | Title: General issues for IAB specificationsMeasurement uncertainties and Test Tolerances**Observation 1**: There is no basis to compare MU/TT between UE testing and BS testing**Observation 2**: It may be hypothesized that a wide area IAB-MT is quite similar to a BS in architecture and will be tested in BS facilities whereas a local area IAB-MT is more like a UE in architecture and may be tested in UE like facilities. Applicability section and statements**Proposal 4: No need for IAB-MT applicability rules (functionality not declared to be supported is not tested anyhow).**  |
| R4-2109207 | Intel Corporation | Title: Views on IAB-MT demodulation performance requirementsSimulation results alignment**Proposal #1: Remove one of the outlier results for PDCCH test cases 3 to have less than 2.5 dB span among companies. Remove outlier that has more misalignment with other companies (Contribute to bigger span)**Test tolerance values**Proposal #2: Reuse test tolerance values from TS 38.521-4 for IAB-MT testing.**Test configuration for PMI and RI reporting requirements**Proposal #3: Adopt PMI/RI reporting requirements as they exist in 38.101-4.**IAB-MT capabilities/features**Proposal #4: Adopt similar test applicability procedure for mandatory IAB-MT features with capability signalling as used for UE. (Reuse TS 38.101-4 clauses 5.1.1.4 and 7.1.1.4.)** |
| R4-2110540 | Huawei, HiSilicon | Title: Discussion on NR IAB-MT demodulation performance requirementsDown scoping and changing of propagation conditions**Proposal 1: If finally less than 3 companies provide results within a span of 2.5 dB, remain the square brackets or add extra margin to the requirements should be considered, do not copy-paste requirements from UE specification.**Test tolerances**Proposal 2: define the TT value based on TE vendor’s input on whether there is necessity to consider the following factors for calculating the maximum test system uncertainty for IAB-MT testing:− Effect of AWGN flatness and signal flatness− SNR uncertainty due to finite test time− Impact on non-ideal isolation between branches for the wireless cable mode**CSI reporting**Proposal 3: For PMI and RI reporting,− change report configuration and CSI-RS resource type from aperiodic to periodic,− or limit requirements to only include periodic NZP CSI-RS and reporting,− or not specify the CSI-RS Resource type/report config is periodic or aperiodic, and just specify the time location, e.g. CSI-RS resources exist in slot#(10n+1).**Test setup for CSI reporting**Proposal 4: Using the following test setup for CSI reporting for IAB-MT.** |
| R4-2110541 | Huawei, HiSilicon | Title: Updated simulation results on NR IAB-MT demodulation performance requirementsSimulation results. No proposals. |
| R4-2110542 | Huawei, HiSilicon | Title: Updated simulation assumptions for NR IAB-MT demodulation requirementsSimulation setup. No proposals. |
| R4-2110543 | Huawei, HiSilicon | Title: Summary of simulation results for NR IAB-MT demodulation requirementsReserved Tdoc. |
| R4-2110726 | Ericsson | Title: IAB-MT related proposalsPMI/RI configurations**Proposal 1: Adopt all PMI/RI requirements but change the reporting type to periodic where needed.**2RX test requirements in the conducted conformance specification**Proposal 2: Only define 4RX conformance tests for type 1-H IAB** |
| R4-2111025 | Nokia, Nokia Shanghai Bell | Title: On IAB-MT demodulation requirementsReserved Tdoc. |
| R4-2111027 | Nokia, Nokia Shanghai Bell | Title: On IAB-MT demodulation requirementsOn down scoping and changing of propagation conditions**Observation 1**: After our revision of the PDCCH simulation results we are observing better alignment of test requirements between the companies, at least based on the data available from the RAN4#98bis-e meeting.Proposal 1: If there are no considerable changes in the results provide by other companies in RAN4#98bis-e meeting and at least 3 companies provide results within a span of 2.5 dB, RAN4 to replace propagation conditions (FR1: TDLC300-100 -> TDLA30-10; FR2: TDLA30-300 -> TDLA30-75) for PDCCH and PDCCH IAB-MT test requirements.**Proposal 2: If the results are still considered to be misaligned, we prefer to Copy-paste requirements from UE specification (including the channel model of the UE specification).****Observation 2**: The simulation results reported for IAB-MT PDSCH Test 3 with PRB bundling size 2 are well aligned.**Proposal 3: Keep prior agreements that only keep requirements with PRB bundling size 2. For rank 3 case, change PRB bundling size from wideband to 2 and update the requirement.**On test tolerances**Observation 3**: Previous agreements require that both BS and UE test equipment can be used without increasing test difficulty.**Proposal 4: RAN4 to use UE TT values from TS 38.521-4.**On CSI reporting requirements**Observation 4**: The main difference between UE radiated PMI reporting Test 1 and Test 2 parameters is in TDD DL-UL configuration. However, it was agreed to follow BS-style testing for IAB-MT. Thus, there is no dependency on the TDD DL-UL pattern. Moreover, the minimum requirements for the both tests are the same.**Proposal 5: Keep only one radiated test (e.g., test 1) for IAB-MT PMI reporting.****Observation 5**: It was agreed to leave CSI-RS parameters, up to implementation in IAB-MT PDSCH testing, if they are used. In IAB-MT PMI reporting requirements, NZP CSI-RS for CSI acquisition shall be present because they are needed to perform CIS measurements. However, the ZP CSI-RS and CSI-IM configurations are not necessary in the test because there is no interference.**Proposal 6: Define only NZP CSI-RS for CSI acquisition configuration in CQI/PMI/RI reporting test parameters**.**Observation 6**: In the current UE PDSCH reference channels used for CSI reporting requirements, the physical resources for CSI-RS are always allocated in every two radio frames, regardless of whether CSI-RS are transmitted or not. It is also kept like that in IAB-MT PDSCH test parameters, e.g., scheduling of PDSCH is skipped in slot#80, 81 for FR2. Hence, it is easier to for test implementation to use already allocated periodic resources and send CSI-RS signals periodically in those.**Proposal 7: Change report configuration and CSI-RS resource type from aperiodic to periodic for IAB-MT PMI and RI reporting requirements.****Observation 7**: If CSI-RS resource type is change from aperiodic to periodic, we do not expect that the minimal performance requirements in PMI and RI reporting can get worse because with periodic configuration the RSs are transmitted with the maximum possible periodicity.**Proposal 8: If the report configuration and CSI-RS resource type is changed from aperiodic to periodic for IAB-MT MPI and RI reporting requirements, re-use already existing UE minimum performance requirements.**On editorial issues**Proposal 9: Use types following both the forms “IAB type 1-H/1-O/2-O” and “IAB-DU/MT type 1-H/1-O/2-O”, where appropriate.**[Moderator: Moved to general specification topic.]**Observation 8**: While preparing the CR on the IAB-MT CSI reporting requirements sections in TS 38.174 [3], we have noticed that there is a need in General section (a subsection of clause 11.2.3.2 “Performance requirements for IAB type 2-O”) to specify common test parameters for all CSI reporting tests. Therefore, there is a need for such General section in any case that can also include Applicability rules. [Moderator: Moved to general specification topic.]**Proposal 10: Same as existing TS 38.101-4, create separate “general” sections for IAB-DU demodulation performance requirements, IAB-MT demodulation performance requirements, and IAB-MT CSI reporting requirements. The general section contains applicability rules for each**. [Moderator: Moved to general specification topic.] |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

*Interested companies are expected to add their views directly under the respective issues in a dialogue-like form, i.e., identical to how the chair would record views during a f2f meeting.*

*Please add further table rows as required and do not change previous comments of your company or other companies. Answering to questions from other companies is encouraged.*

### Sub-topic 3-1: Simulation results alignment

*Sub-topic description:*

*Open issues and candidate options before e-meeting:*

**Issue 3-1-1: PDCCH outlier treatment**

* Proposals
	+ Option 1 (): Remove one of the outlier results for PDCCH test cases 3 to have less than 2.5 dB span among companies. Remove outlier that has more misalignment with other companies (Contribute to bigger span)
	+ Option 2: Other options not precluded.
* Recommended WF
	+ In first round, verify that this issue is still relevant, after simulation results updates in this meeting.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | As per the latest simulation results provided by companies, all cases are aligned, so we have not to discuss this issue. |
| Nokia, Nokia Shanghai Bell | In our understanding no other company has updated the simulation results since the last meetings. Taking into account the updates in simulation results on our side, there are no more outliers in PDCCH. Thus, the Issue loos to be not relevant any more. |

**Issue 3-1-2: Propagation condition outlier treatment**

* Proposals
	+ Option 1 (): If finally less than 3 companies provide results within a span of 2.5 dB, remain the square brackets or add extra margin to the requirements should be considered, do not copy-paste requirements from UE specification.
	+ Option 2 (): If the results are still considered to be misaligned, we prefer to Copy-paste requirements from UE specification (including the channel model of the UE specification).
	+ Option 3: Other options not precluded
* Recommended WF
	+ In first round, verify that this issue is still relevant, after simulation results updates in this meeting.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | As per the latest simulation results provided by companies, all cases are aligned, so we have not to discuss this issue. |
| Nokia, Nokia Shanghai Bell | Looks to be not relevant anymore. See a comment on the previous Issue. |

**Issue 3-1-3: PDSCH PRB bundling size**

* Prior agreement [R4-2106172]:
	+ PRB bundling size
		- Keep prior agreements that only keep requirements with PRB bundling size 2. For rank 3 case, change PRB bundling size from wideband to 2 and re-simulate that case.
* Proposals
	+ Option 1 (): Keep prior agreements that only keep requirements with PRB bundling size 2. For rank 3 case, change PRB bundling size from wideband to 2 and update the requirement.
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Only proposal received is in line with prior agreement.
	No new agreement required.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | We prefer to keep previous agreements and no need to discuss this issue. |
| Nokia, Nokia Shanghai Bell | As far as there all the results are aligned, we are OK to follow the prior agreement, i.e. Option 1 is fine. |
| Intel | Option 1 is fine. |

### Sub-topic 3-2: CSI reporting requirements

*Sub-topic description*

*Open issues and candidate options before e-meeting:*

**Issue 3-2-1: Test configuration for PMI reporting requirements**

* Proposals
	+ Option 1 (): Adopt PMI reporting requirements as they exist in 38.101-4.
	+ Option 2 (): Adopt all PMI requirements as they exist in 38.101-4, but change the reporting type to periodic, where needed.
	+ Option 3a (): For PMI reporting, change report configuration and CSI-RS resource type from aperiodic to periodic.
	+ Option 3b (): For PMI reporting, limit requirements to only include periodic NZP CSI-RS and reporting.
	+ Option 3c (): For PMI reporting, not specify the CSI-RS Resource type/report config is periodic or aperiodic, and just specify the time location, e.g. CSI-RS resources exist in slot#(10n+1).
	+ Option 4a (): Define only NZP CSI-RS for CSI acquisition configuration in PMI reporting test parameters.
	+ Option 4c (): If the report configuration and CSI-RS resource type is changed from aperiodic to periodic for IAB-MT PMI reporting requirements, re-use already existing UE minimum performance requirements.
	+ Option 5 (Moderator): Adopt all PMI requirements from 38.101-4, but change the reporting configuration and CSI-RS resource type to periodic, where needed, and define only NZP CSI-RS for CSI acquisition configuration in PMI reporting test parameters.
	+ Option 6: Other options not precluded.
* Recommended WF
	+ Discuss in first round.
	+ The moderator has tried to construct a compromise from the proposals of all four contributors.
	Please consider option 5, and state if it acceptable as a compromise.
	+ Companies with more than one proposal are invited to either combine them in one or, state their priorities in case the options are mutually exclusive.

-------------GTW Note----------------

Agreement: Option 5

Adopt all PMI requirements from 38.101-4, but change the reporting configuration and CSI-RS resource type to periodic, where needed, and define only NZP CSI-RS for CSI acquisition configuration in PMI reporting test parameters.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | We are OK with Option 5: Adopt all PMI requirements from 38.101-4, but change the reporting configuration and CSI-RS resource type to periodic, where needed, and define only NZP CSI-RS for CSI acquisition configuration in PMI reporting test parameters. |
| Ericsson | We are also OK for option 5 |
| Nokia, Nokia Shanghai Bell | We believe that it is a common understanding that the PMI/RI requirements are kept without changes from the UE specifications even if the test are changed from aperiodic to periodic.Next, we think that it is necessary to align testing with BS/FRC-based approach. As far as periodic reporting can get use of periodic CSI-RS resource allocation and does not require additional signalling, it is straightforward to apply FRC-based configuration without bi-directional interface.Hence, we support Option 5. |
| Intel | We are fine with Option 5. |

**Issue 3-2-2: TDD pattern independence and test differentiation in PMI reporting requirements**

* Background [R4-2111027]
	+ (Nokia): Observation 4: The main difference between UE radiated PMI reporting Test 1 and Test 2 parameters is in TDD DL-UL configuration. However, it was agreed to follow BS-style testing for IAB-MT. Thus, there is no dependency on the TDD DL-UL pattern. Moreover, the minimum requirements for the both tests are the same.
* Proposals
	+ Option 1 (): Keep only one radiated test (e.g., test 1) for IAB-MT PMI reporting.
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Discuss in first round.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | OK with Option 1. |
| Ericsson | Option 1 OK |
| Nokia, Nokia Shanghai Bell | We do not see a need to keep two equivalent tests. Option 1. |
| Intel | Option 1 is fine. |

**Issue 3-2-3: Test configuration for RI reporting requirements**

* Proposals
	+ Option 1 (): Adopt RI reporting requirements as they exist in 38.101-4.
	+ Option 2 (): Adopt all RI requirements as they exist in 38.101-4, but change the reporting type to periodic, where needed.
	+ Option 3a (): For RI reporting, change report configuration and CSI-RS resource type from aperiodic to periodic.
	+ Option 3b (): For RI reporting, limit requirements to only include periodic NZP CSI-RS and reporting.
	+ Option 3c (): For RI reporting, not specify the CSI-RS Resource type/report config is periodic or aperiodic, and just specify the time location, e.g. CSI-RS resources exist in slot#(10n+1).
	+ Option 4a (): Define only NZP CSI-RS for CSI acquisition configuration in RI reporting test parameters.
	+ Option 5 (Moderator): Follow agreement from issue 3-2-1.
	+ Option 6: Other options not precluded.
* Recommended WF
	+ Discuss in first round.
	Moderator is recommending considering option 5 to speed up discussion.

--------------GTW note----------

Agreement: Option 5

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | Same view as Issue 3-2-1. |
| Ericsson | Option 5 is OK |
| Nokia, Nokia Shanghai Bell | Agree with Option 5. |
| Intel | Support Option 5. |

**Issue 3-2-4: Test configuration for CQI reporting requirements**

* Proposals
	+ Option 1 (): Define only NZP CSI-RS for CSI acquisition configuration in CQI reporting test parameters.
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Discuss in first round.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | OK with Option 1. |
| Ericsson | Option 1 OK |
| Nokia, Nokia Shanghai Bell | NZP CSI-RS for CSI acquisition configuration is mandatory because these reference symbols are needed to make CSI measurements. Other CSI-RS configurations are not necessary for BS-style testing and can be left for implementation. |
| Intel | Support Option 1. |

**Issue 3-2-5: Test setup for CSI reporting**

* Proposals
	+ Option 1 (): Using the following test setup for CSI reporting for IAB-MT
	
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Discuss in first round.
	Potential overlap with CR discussions.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | Option 1. |
| Ericsson | OK |
| Nokia, Nokia Shanghai Bell | In general, we agree that CSI feedback shall be provided in PMI/RI reporting tests. However, in our opinion, it is sufficient to include just one generic Feedback link. Either only one link is used both for HARQ and CSI feedback or tow separate links, can be left to implementation.If found to be needed, either a note or clarifying text in the figure itself can be used to emphasise that the feedback is needed for HARQ (PDSCH and PUSCH) and CSI (PMI and RI reporting).As a reference, Figure E.X.2-1 from our pTP R4-2111348 for 38.176-2 can be used.A small further detail would be that the TE is usually on the left side to match the layout of the other demod test setups. |
| Nokia, Nokia Shanghai Bell | We have several additional comments on the proposed figure:1. We do not see a strong need to have a separate test setup figure for CSI reporting. The same figure as for PUSCH, PRACH in AWGN channel can be used.
2. Assuming that we are describing BS-style test setup, a synchronization link should be present. It is not shown in the scheme now.
3. "Load" should probably be "termination" because the DUT is not sending anything.
 |

### Sub-topic 3-3: Remaining issues

*Sub-topic description*

*Open issues and candidate options before e-meeting:*

**Issue 3-3-1: General applicability rules**

* Proposals
	+ Option 1 (): No need for IAB-MT applicability rules (functionality not declared to be supported is not tested anyhow).
	+ Option 2: Other proposals not excluded
* Recommended WF
	+ Discuss in first round.

-----------------GTW Note------------------------

Nokia: For PMI and RI reporting, requirements can be included with declaration basis. 38.306 PMI reporting is mandatory feature. We need to combined UE capability feature basis and BS declaration basis.
We need to applicable rules for PMI,RI testing for IAB-MT.

Intel: We share similar view as Nokia. We need to generate general test applicable rules considering IAB-MT feature list.

Huawei: We don’t need to follow UE method for IAB-MT. Either declaration basis or applicable rules can be defined.

E///: In our view, IAB-MT is network node, we don’t have mandatory feature or optional, for BS only declaration basis. Similar view as Huawei.

Nokia: We can declare this test cases even it’s mandatory feature. We need both applicable rules and declarfication.

Intel: It’s contradict with RAN1 design with declaration basis, IAB-MT capability signalling already specified in RAN2.

Ercisson: declaration for supporting this feature vs declaration for testing? -> Test applicable rules

Huawei: declaration means supporting this feature. Test cases can be further based on test applicable rules.

Nokia: We can try to use test applicable rules for this specific cases.

Intel: Inter-vendor operation still allowed within WID of Rel-16 IAB. We think we should only define declaration for optional feature. Are you going to generate declaration for mandatory features?

Nokia: IAB MT declaration should be aligned with IAB-MT feature list specified in RAN2 capability signalling. transform previous agreement to ensure PMI, RI test is optional.

Agreement:

IAB MT declaration for mandatory feature should be aligned with IAB-MT feature list specified in RAN2 capability signalling. Transform previous agreement to ensure PMI, RI test is optional.

Previous agreements made in RAN4 still valid, if any confliction identified with IAB-MT feature list, RAN4 can further discuss in a case by case manner.

---------------------End ---------------------

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | We are OK with Option 1. Cases are mandatory for those not in manufacture declaration list. |
| Ericsson | Option 1 OK |
| Nokia, Nokia Shanghai Bell | In our opinion, manufacture declaration approach should be used also for IAB-MT. Hence, the applicability rules should be present.How then to define then if PMI/RI reporting shall be tested?See also our comment for the Issues 3-3-3. |
| Intel | We have mandatory IAB-MT features with capability signalling for demod and CSI reporting requirements. It is RAN1 design. Defining a new manufacturer declaration for them is contradictive with RAN1 agreements and will make confusions that we have IAB-MT feature list with capability signalling in RAN1 spec and same manufacturer declarations in RAN4 spec. For mandatory features we should not define manufacturer declarations. |
| Nokia, Nokia Shanghai Bell | Following the GtW discussion and agreements, we would like to propose adding the statement below in the Section on Applicability of requirements for mandatory IAB-MT features with capability signalling in TS 38.174 and in the CSI reporting applicability rule section of TSs 38.176:*Testing of performance requirements for PMI/RI reporting (Clause x.x ) is optional.* |

**Issue 3-3-2: Test tolerance and measurement uncertainty selection**

* Proposals
	+ Option 1 (): There is no basis to compare MU/TT between UE testing and BS testing.
	It may be hypothesized that a wide area IAB-MT is quite similar to a BS in architecture and will be tested in BS facilities whereas a local area IAB-MT is more like a UE in architecture and may be tested in UE like facilities.
	+ Option 2 (): Reuse test tolerance values from TS 38.521-4 for IAB-MT testing.
	+ Option 3 (): Define the TT value based on TE vendor’s input on whether there is necessity to consider the following factors for calculating the maximum test system uncertainty for IAB-MT testing:
	− Effect of AWGN flatness and signal flatness
	− SNR uncertainty due to finite test time
	− Impact on non-ideal isolation between branches for the wireless cable mode.
	+ Option 4: Other proposals not excluded
* Recommended WF
	+ Discuss in first round.
	+ Following the first GtW: The FFS are to be captured in the chairman’s notes. The agreement can be captured in the WF, if a WF is ultimately allocated.

-------------------GTW Note----------------

E///: We think option 3 more suitable. Another way differentiates WA and Local IAB-MT, WA used with BS approach, local IAB-MT with UE values.

Intel: Better to further check with TE, we proposed to with option as baseline assumption meanwhile companies can be further check and revised later if needed.

Huawei: We think Intel’s proposal make sense.

Nokia: We think Intel’s proposal.

Agreement:

Using option 2 from UE side as starting point, with [] into specification; companies especially TE vendors are encouraged to bring further analysis for MU/TT and RAN4 can revise the values if needed in future RAN4 meeting.

RAN4 can further discuss below issues:

* FFS whether UE or BS MU/TT values can be aligned for IAB-MT
* FFS whether requirements will be relaxed if BS test method used for IAB-MT with MU/TT values from UE sides

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | Option 3. |
| Ericsson | Option 3 is a good starting point. We do not envisage an uncertainty due to testing time here as testing time is anyhow not long like URLLC. Regarding non-ideal isolation between cables, we need to understand more whether this is an issue for DUTs that do not have a UE form factor. AWGN and spectral flatness seems a high contributor that does not exist at all for BS testing. We would like to understand more why it would be applicable. |
| Nokia, Nokia Shanghai Bell | We propose to use UE Test tolerances from TS 38.521-4 as a basis for IAB-MT test tolerances. Initially, they can be included in the specifications in square brackets. |
| Intel | We support suggestion from Nokia to define TT values in square brackets based on RAN5 spec and further clarify applicability of them with TE vendors. |

**Issue 3-3-3: Test applicability with respect to capabilities/features**

* Proposals
	+ Option 1 (): Adopt similar test applicability procedure for mandatory IAB-MT features with capability signalling as used for UE. (Reuse TS 38.101-4 clauses 5.1.1.4 and 7.1.1.4.)
	+ Option 2 (): Use manufacturer declaration method to decide which cases are to be tested.
* Recommended WF
	+ Discuss in first round.
	+ Note: There is a link between some options of issue 3-3-1 and issue 3-3-3.
	+ Following the first GtW: Please check GtW notes of issue 3-3-1 for agreements also on this issue.
	An informative WF will be allocated to Intel to discuss and capture examples of how the agreements are implemented and applicability rules are to be treated.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | Considering that IAB-MT is a part of the network, it is more suitable to use manufacture declaration method to decide which cases are to be tested. |
| Ericsson | Agree with Huawei that manufacture declaration is appropriate for IAB. |
| Nokia, Nokia Shanghai Bell | In our opinion, it makes sense to handle IAB-MT capabilities/features with manufacture declaration approach. Taking into account that IAB nodes are the part of the NW infrastructure, in our understanding, the operator will be well aware of supported functionalities both from IAB-DU and IAB-MT sides. Thus, no compatibility issues can be expected. |
| Intel | We have mandatory IAB-MT features with capability signalling for demod and CSI reporting requirements. It is RAN1 design. Defining a new manufacturer declaration for them is contradictive with RAN1 agreements and will make confusions that we have IAB-MT feature list with capability signalling in RAN1 spec and same manufacturer declarations in RAN4 spec. For mandatory features we should not define manufacturer declarations. We suggest reusing tables “Requirements applicability for mandatory features with UE capability signalling” from UE spec.As we previously discussed we should avoid definition of manufacturer declarations just to select requirements for testing |

**Issue 3-3-4: Number of RX in conducted conformance specification**

* Prior agreement [R4-2017673]:
	+ General RX demodulation branches
		- 4Rx for conducted test only and 2Rx for radiated test only for FR1 and 2RX for FR2
* Proposals
	+ Option 1 (): Only define 4RX conformance tests for type 1-H IAB
	+ Option 2: Other options not precluded.
* Recommended WF
	+ Discuss in first round.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| Huawei | Option 1 has the same proposal with the previous agreements. We prefer to keep previous agreements and no need to discuss this issue. |
| Ericsson | OK to keep previous agreement |
| Nokia, Nokia Shanghai Bell | Since no IAB type C exists, it seems clear that the former agreement already covers type 1-H IAB. |
| Intel | Support Option 1. |

### Sub-topic 3-4: Other

*Sub-topic description:*

*In this sub-topic companies are invited to bring issues to the attention of the group, which have not been captured in the previous sub-topics.*

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |

### 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 | Title, Source |
| Company A |
| Company B |
|  |
| **None, see topic#1.** |  |
|  |
|  |
|  |

## 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** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |
| **Sub-topic 3-1** | **Sub-topic 3-1: Simulation results alignment**Issue 3-1-1: PDCCH outlier treatment*Tentative agreements:*None*Candidate options:*None*Recommendations for 2nd round:*Following the simulation result updates in this meeting, no outliers remain.No agreement is required.Issue 3-1-2: Propagation condition outlier treatment*Tentative agreements:*None*Candidate options:*None*Recommendations for 2nd round:*Following the simulation result updates in this meeting, no outliers remain.No agreement is required.Issue 3-1-3: PDSCH PRB bundling size*Tentative agreements:*None*Candidate options:*None*Recommendations for 2nd round:*All companies agree to keep the prior agreements.I.e., no new agreement necessary. |
| **Sub-topic 3-2** | **Sub-topic 3-2: CSI reporting requirements**Issue 3-2-1: Test configuration for PMI reporting requirements*GtW agreements:*Adopt all PMI requirements from 38.101-4, but change the reporting configuration and CSI-RS resource type to periodic, where needed, and define only NZP CSI-RS for CSI acquisition configuration in PMI reporting test parameters.*Candidate options:*None*Recommendations for 2nd round:*Issue was resolved in GtW.Issue 3-2-2: TDD pattern independence and test differentiation in PMI reporting requirements*Tentative agreements:*Keep only one radiated test (e.g., test 1) for IAB-MT PMI reporting.*Candidate options:*None*Recommendations for 2nd round:*No counter opinions voiced in first round.Tentative agreement is agreeable.Issue 3-2-3: Test configuration for RI reporting requirements*GtW agreements:*Follow agreement from issue 3-2-1*Candidate options:*None*Recommendations for 2nd round:*Issue was resolved in GtW.Issue 3-2-4: Test configuration for CQI reporting requirements*Tentative agreements:*Define only NZP CSI-RS for CSI acquisition configuration in CQI reporting test parameters.*Candidate options:*None*Recommendations for 2nd round:*No counter opinions voiced in first round.Tentative agreement is agreeable.Issue 3-2-5: Test setup for CSI reporting*Tentative agreements:*None*Candidate options:** Option 1: Using the following test setup for CSI reporting for IAB-MT
* Option 2: Other options not precluded.

*Recommendations for 2nd round:*Diverse views and comments on the figure have been received in the first round.Continue discussion in second round.Possibly directly in the CR discussions. In case no agreement is reached, we might want to keep the figures in the TPs as “TBD”. |
| **Sub-topic 3-3** | **Sub-topic 3-3: Remaining issues**Issue 3-3-1: General applicability rules*GtW agreements:*IAB MT declaration for mandatory feature should be aligned with IAB-MT feature list specified in RAN2 capability signalling. Transform previous agreement to ensure PMI, RI test is optional.Previous agreements made in RAN4 still valid, if any confliction identified with IAB-MT feature list, RAN4 can further discuss in a case by case manner.*Candidate options:*None*Recommendations for 2nd round:*Issue was partially resolved in GtW.The exact wording weill be discussed in the allocated Way forward on IAB-MT applicability rules drafting in conformance specificationsIssue 3-3-2: Test tolerance and measurement uncertainty selection*GtW agreements:*Using option 2 from UE side as starting point, with [] into specification; companies especially TE vendors are encouraged to bring further analysis for MU/TT and RAN4 can revise the values if needed in future RAN4 meeting.*Candidate options:*o Option 2: Reuse test tolerance values from TS 38.521-4 for IAB-MT testing.*Recommendations for 2nd round:*Issue was partially resolved in GtW.Following the first GtW, the FFS are to be captured in the chairman’s notes. The agreement can be captured in the WF, if a WF is ultimately allocated.Issue 3-3-3: Test applicability with respect to capabilities/features *Tentative agreements:*None*Candidate options:** Option 1: Adopt similar test applicability procedure for mandatory IAB-MT features with capability signalling as used for UE. (Reuse TS 38.101-4 clauses 5.1.1.4 and 7.1.1.4.)
* Option 2: Use manufacturer declaration method to decide which cases are to be tested

*Recommendations for 2nd round:*Note: There is a link between some options of issue 3-3-1 and issue 3-3-3.Please check GtW agreement of issue 3-3-1 for agreements also impacting this issue.An informative WF is requested for Intel to discuss and capture examples of how the agreements are implemented and applicability rules are to be treated.Issue 3-3-4: Number of RX in conducted conformance specification*Tentative agreements:*None*Candidate options:*None*Recommendations for 2nd round:*It is common understanding that option 1 (only option) is equivalent to the prior agreement.Hence it is recommended to not seek agreement on this issue. |

*Recommendations on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title**  | **Assigned Company,****WF or LS lead** |
| #1 |  |  |
| **None** |  |  |

### CRs/TPs

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

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

|  |  |
| --- | --- |
| **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”* |
| **None** |  |

## Discussion on 2nd round

~~This section will be prepared for the 2~~~~nd~~ ~~round summary and sent out before 3 am UTC on Monday.~~

### Sub-topic 3-1: (2nd) Simulation results alignment

No remaining issues at the start of 2nd round.

### Sub-topic 3-2: (2nd) CSI reporting requirements

Issue 3-2-5: Test setup for CSI reporting

*Candidate options:*

* Option 1: Using the following test setup for CSI reporting for IAB-MT

* Option 2: Other options not precluded.

*Recommendations for 2nd round:*

Diverse views and comments on the figure have been received in the first round.

Continue discussion in second round.
Possibly directly in the CR discussions. In case no agreement is reached, we might want to keep the figures in the TPs as “TBD”.

Contributor Comments:
(Dialog; please do not modify earlier comments; add follow-up always at the bottom of the discussion.)

[XXX]:

### Sub-topic 3-3: (2nd) Remaining issues

Issue 3-3-3: Test applicability with respect to capabilities/features

*Candidate options:*

* Option 1: Adopt similar test applicability procedure for mandatory IAB-MT features with capability signalling as used for UE. (Reuse TS 38.101-4 clauses 5.1.1.4 and 7.1.1.4.)
* Option 2: Use manufacturer declaration method to decide which cases are to be tested

*Recommendations for 2nd round:*

Note: There is a link between some options of issue 3-3-1 and issue 3-3-3.

Please check GtW agreement of issue 3-3-1 for agreements also impacting this issue.
An informative WF is requested for Intel to discuss and capture examples of how the agreements are implemented and applicability rules are to be treated.

Contributor Comments:
(Dialog; please do not modify earlier comments; add follow-up always at the bottom of the discussion.)

[XXX]:

## 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”* |
|  |  |

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |
| --- | --- | --- |
| **Title** | **Source** | **Comments** |
| WF on … | YYY |  |
| LS on … | ZZZ | To: RAN\_X; Cc: RAN\_Y |
| Way forward on IAB-MT applicability rules drafting in conformance specifications | Intel Corporation |  |
| WF on Rel-16 NR IAB demodulation requirements | Nokia, Nokia Shanghai Bell |  |

**Existing tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-210xxxx | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-2109208 | draftCR to 38.174: IAB-MT and IAB-DU performance requirements | Intel | Revised |  |
| R4-2109209 | TP to TS 38.176-1: FRC and PRACH test preambles | Intel | Revised |  |
| R4-2109210 | TP to TS 38.176-2: Demodulation manufacturer declarations | Intel | Revised |  |
| R4-2110537 | pCR on IAB conducted conformance testing (Manufacturer declarations) to TS 38.176-1 | Huawei | Revised |  |
| R4-2110538 | pCR on IAB radiated conformance testing (FRCs and PRACH test preambles) to TS 38.176-2 | Huawei | Revised |  |
| R4-2110722 | pCR to 38.176-1: Introduction of annexes on test tolerance, test setup and propagation conditions for performance requirements | Ericsson | Revised |  |
| R4-2110723 | Draft CR to 38.174: FRCs and PRACH preambles | Ericsson | Revised |  |
| R4-2111348 | draftTP to TS 38.176-2 IAB-DU performance requirements and parts of DU and MT appendix | Nokia | Revised |  |
| R4-2110717 | Draft CR to 38.174: Introduction of IAB-DU performance requirements | Ericsson | Revised |  |
| R4-2111350 | draftTP to TS 38.176-1 IAB-DU performance requirements | Nokia | Revised |  |
| R4-2110539 | Big CR on IAB-MT demodulation in TS 38.174 | Huawei | Revised |  |
| R4-2110544 | pCR on IAB-MT conducted conformance testing (CSI reporting and Interworking) to TS 38.176-1 | Huawei | Revised |  |
| R4-2110545 | CR on IAB-MT conducted performance requirements (General and Demodulation) in TS 38.174 | Huawei | Revised | This CR should be revised into a draftCR.CRs are not allowed in bigCR approach |
| R4-2110546 | pCR on IAB-MT radiated conformance testing (General and Demodulation) to TS 38.176-2 | Huawei | Revised |  |
| R4-2110721 | pCR to 38.176-2: Introduction of CSI-RS performance tests and requirements | Ericsson | Revised |  |
| R4-2110724 | pCR to 38.176-1: IAB-MT performance tests | Ericsson | Revised |  |
| R4-2111237 | TS 38.174 draftCR CSI reporting radiated performance requirements | Nokia | Revised |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics incl. existing and new tdocs.
2. For the Recommendation column please include one of the following:
	1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
	2. Other documents: Agreeable, Revised, Noted
3. For new LS documents, please include information on To/Cc WGs in the comments column
4. Do not include hyper-links in the documents

## 2nd round

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-210xxxx | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-210xxxx | WF on … | YYY | Agreeable, Revised, Noted |  |
| R4-210xxxx | LS on … | ZZZ | Agreeable, Revised, Noted |  |
|  |  |  |  |  |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics.
2. For the Recommendation column please include one of the following:
	1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
	2. Other documents: Agreeable, Revised, Noted
3. Do not include hyper-links in the documents