3GPP TSG-RAN WG4 Meeting # 99-e R4-210xxxxx

Electronic Meeting, May. 19-27, 2021

**Agenda item:** 6.3.2.1, 6.3.2.2

**Source:** Moderator (Huawei)

**Title:** Email discussion summary for 98-bis-e [306] NR\_IAB\_Conformance\_Part1

**Document for:** Information

# Introduction

This topic covers the IAB conformance general issues

* TP’s in the general clauses (1 to 5)
* Test models and test configurations
* Measurement issues including MU determination and test point reduction

There are 2 subjects where there are a number of items best discussed by reviewing tables, namely

* + Test point reduction
	+ MU determination

Tables have been provided with a view to aid those discussions.

# Topic #1: Test models and test configurations

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2110139 | Nokia | Proposal 1: It is proposed to use TDD uplink/downlink configurations that have an around 1-to-1 UL/DL ratio for IAB-DU and IAB-MT conformance testing.Proposal 2: It is proposed to agree TDD configurations for FR1 for IAB-DU and IAB-MT as in table 1.Table 1: Configurations of TDD for IAB test models for FR1

|  |  |
| --- | --- |
| Field name | Value  |
| referenceSubcarrierSpacing (kHz) | 15 | 30 | 60 |
| Periodicity (ms) for dl-UL-TransmissionPeriodicity | 5  | 5 | 5 |
| nrofDownlinkSlots | 2 | 5 | 9 |
| nrofDownlinkSymbols | 6 | 5 | 10 |
| nrofUplinkSlots | 2 | 4 | 9 |
| nrofUplinkSymbols | 6 | 5 | 10 |

Proposal 3: It is proposed to agree TDD configurations for FR2 for IAB-DU and IAB-MT as in table 2.Table 2: Configurations of TDD for IAB test models for FR2

|  |  |
| --- | --- |
| Field name | Value |
| referenceSubcarrierSpacing (kHz) | 60 | 120 |
| Periodicity (ms) for dl-UL-TransmissionPeriodicity | 1.25  | 1.25  |
| nrofDownlinkSlots | 2 | 5 |
| nrofDownlinkSymbols | 6 | 5 |
| nrofUplinkSlots | 2 | 4 |
| nrofUplinkSymbols | 6 | 5 |

Observation 1: |
| R4-2110140 | Nokia | **Proposal 1:** It is proposed to modify existing legacy NR TCs in part related to carrier settings for TC.**Proposal 2:** It is proposed to place both DL and UL transmission for IAB-DU and IAB-MT in the same TC.**Proposal 3**: It is proposed to define the IAB TCs with the IAB-MT UL (with single PRB allocation) and IAB-DU DL (with full PRBs allocation) carrier(s) placed as the outermost carrier at both edges the IAB RF bandwidth as the more stringent case. |
| R4-2111174 | Ericsson | **Proposal-1a:** Discuss the above core requirement classification for IAB-MT different test model design.**Proposal-1b:** Adopt the above {ed: below} common parameter configuration for IAB-MT test model.Table x.y.z -1: Configurations of TDD for *IAB-MT type 1-H and type I-O* test models

|  |  |
| --- | --- |
| Field name | Value  |
| referenceSubcarrierSpacing (kHz) | 15 | 30 | 60 |
| Periodicity (ms) for dl-UL-TransmissionPeriodicity | 5  | 5 | 5 |
| nrofDownlinkSlots | 3 | 7 | 14 |
| nrofDownlinkSymbols | 10 | 6 | 12 |
| nrofUplinkSlots | 1 | 2 | 4 |
| nrofUplinkSymbols | 2 | 4 | 8 |

**Proposal-2**: Use the 2 DMRS symbol in IAB-MT test model following the BS approach**.****Mod: A TP is provided based on these proposal for clause 4.9** |
| R4-2111205 | Ericsson | **Proposal-1:** Discuss the above core requirement classification for IAB-MT different test model design.**Observation#1:** UE and BS TDD configuration achieve the same # uplink time slot for 20ms test model definition time.**Proposal-2:** Use the BS TDD configuration.Table x.y.z-1: Configurations of TDD for *IAB type 2-O* test models

|  |  |
| --- | --- |
| Field name | Value |
| referenceSubcarrierSpacing (kHz) | 60 | 120  |
| Periodicity (ms) for dl-UL-TransmissionPeriodicity | 1.25  | 1.25  |
| nrofDownlinkSlots | 3 | 7 |
| nrofDownlinkSymbols | 10 | 6 |
| nrofUplinkSlots | 1 | 2 |
| nrofUplinkSymbols | 2 | 4 |

**Proposal-3:** Adopt the above common parameter configuration for IAB-MT test model.**Proposal-4:** Adopt the above common parameter configuration for IAB-MT test model for the IAB type 2-O.**Mod: A TP is provided based on these proposal for clause 4.9** |
| R4-2111398 | Huawei | The simultaneous testing of IAB-DU and IAB-MT - We don’t see the need for this at this release as worst case testing for shared HW IAB-DU/IAB-MT should be sufficient to reduce test timeThe use of high PSD test model with single RB at band edge. - It is not clear that the worst case high PSD test model used for UE is necessary for IAB-MT as both the RF requirements and deployment scenarios are quite different. In addition the potential high power output of IAB-MT compared to UE may make such a case impractical. |
| R4-2109017 | CATT | TP for TS 38.176-1: Test configurations and applicability of requirements**Mod: clause 4.7, 4.8** |
| R4-2109018 | CATT | TP for TS 38.176-2: Test configurations and applicability of requirements**Mod: clause 4.7, 4.8** |

## Open issues summary

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

### Sub-topic 1-1 – Test models – TDD configuration

The issue of the TDD configuration for the test models remains with 2 options

**Issue 1-1-1: FR1 TDD split**

* Proposals
	+ Option 1: even split between UL and DL slots
	+ Option 2: Existing BS split (approx. 3:1 ratio of Dl to UL slots)
* Recommended WF
	+ TBA

**Issue 1-1-2: FR2 TDD split**

* Proposals
	+ Option 1: even split between UL and DL slots
	+ Option 2: Existing BS split (approx. 3:1 ratio of Dl to UL slots)
* Recommended WF
	+ TBA

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

FR1 TDD pattern

Option 2 agreed, reusing existing BS configuration

FR2 TDD pattern

Option 2 agreed, reusing existing BS configuration.

### Sub-topic 1-2 - Test configurations

There is a proposal to use a high PSD signal at the RF BW edge to test the IAB-MT

**Issue 1-2: IAB-MT test configuration**

* Proposals
	+ Option 1: Place a high PSD single RB carrier at RF BW edge
	+ Option 2: Place a full RB carrier at the RF BW edge
* Recommended WF
	+ TBA

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

Nokia: This is co-existence issue that impact neighbor operation. Regulatory need to be considered. Option 1 brings worst case for emission on adjacent channel.

QC: How to ensure IAB-MT to meet emission in all cases? IAB-DU can schedule this case which out of IAB-MT control.

E///: Deployment can be well planned to avoid such case for IAB-MT operation. IAB-MT power is declaration basis, if there is issue then they should avoid to use such power level.

CATT: In test configuration, we have general wording, “the carrier can be configured on any RB allocation in test configuration”; for single RB high PSD, most important is transmission power case, for emission, no issue. For UE side, we have CIM3 problem, for BS no such issue. In test model, RB allocation is specified.

The discussion can be decoupled with test configurations and test model. If Nokia concern is emission, we can discuss for emission test. We would like to see more detailed technical analysis with contributions. For dynamic range discussion, Nokia objected to define single RB with high PSD cases, while CATT proposed to have it. And we comprised to not it for sake of progress. Now the situation seems strange, we can further discuss in maintenance other than on conformance.

Nokia: NO way to control neighbor deployment to use narrow band operation. Unless we can have restriction on deployment into specification. Emission and blocking both need to be considered. Limiting output power only avoid blocking issue. In BS side, we have group delay due to BS filter.

E///: IAB-DU/NW still can control for the scheduling to avoid receiving of only single RB case.

ZTE: High PSD with single RB, what’s the definition of high PSD. It’s not feasible to boost all power on single RB case. We don’t MPR method for IAB-MT. We agree to apply option 2.

Huawei: ACLR is more stringent and should be enough.

QC: Is there any regulatory requirement? Control channel can be deployed in channel edge with single RB with high power not full power.

Nokia: How to guarantee for such restriction for IAB deployment without 3GPP requirements? Option 2 with limitation statement.

Further discuss and come back into 2nd round

Decouple the discussion on test configuration and single RB High PSD proposal

## Companies views’ collection for 1st round

### Open issues

*One of the two formats, i.e. either example 1 or 2 can be used by moderators.*

**Example 1**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 1-1: Sub topic 1-2:….Others: |
| CATT | **Issue 1-1-1: FR1 TDD split**Support option 2. We analyzed this issue in our contribution R4-2100371 that for FR1 BS TDD pattern and UE TDD pattern are the same. So we don’t see the necessity to change it.**Issue 1-1-2: FR2 TDD split**If there’s no problem for BS split, we can accept BS approach. We see the difference between BS and UE FR2 TDD pattern, and also would like to know if there’s a problem to reuse UE split. **Issue 1-2: IAB-MT test configuration** We don’t think there’s a need to add explicit RB configuration in the common test configuration clause. The general wording “carrier” means any RB allocation can be allowed according to the test model. It’s the scope of test model that defines the RB number and RB position, for example Table 4.9.2.2.1-1 in TS 38.141-1. And IABTC1 is used by many requirements, whether single RB high PSD is used needs more discussion.For the single RB high PSD allocation, our company proposed it for the output power requirement in the early discussion, but it was not approved unfortunately for many meetings’ discussion. For other requirements, we don’t see the necessity to test it. So we’re not sure if we should reopen this discussion in such a late stage. |
| Ericsson | **Issue 1-1-1: FR1 TDD split****Option 2:** **Issue 1-1-2: FR2 TDD split****Option 2:** **Issue 1-2: IAB-MT test configuration** **Issue 1-2: IAB-MT test configuration** **Option 2: it is not likely IAB node will be deployed like UE at the cell edge where high PSD for single RB helpful for control channel coverage. If it did, there will be no high throughput for backhaul traffic as the SNR will not be enough for higher MCS.** |
| Nokia | Issue 1-1-1: Support option 1. As we discussed in our contribution R4-2110139, this TDD pattern will allow simultaneous testing of IAB-DU and IAB-MT for FR1.Issue 1-1-2: Support option 1. As we discussed in our contribution R4-2110139, this TDD pattern will allow simultaneous testing of IAB-DU and IAB-MT for FR2.Issue 1-2: Support option 1. We elaborated in R4-2110140 single RB transmission will still be a more challenging case compared to full RB transmission for emission testing, despite of the higher ACLR of IAB-MT, it cannot be ensure that IAB-MT passing emission test with full RB transmission can pass it with single RB transmission. |
| Samsung | **Issue 1-1-1: FR1 TDD split/ Issue 1-1-2: FR2 TDD split**We still prefer option 2 as previous meetings. Even though we agree that testing would be time consuming for IAB case, it’s not convinced yet that the TDD configuration update can really be constructive solution to resolve this problem. **Issue 1-2: IAB-MT test configuration** For TC in BS conformance testing the Power allocation is just described in general as below:* The same power spectral density is allocated for contiguous spectrum case for MC and /or CA operation
* For non-contiguous spectrum case and multi-band case, set the power of each carrier to the same level.

But more detail with power condition and PRB allocation for dedicated requirement is addressed in TM clause. Hence in test configuration it is proposed to follow BS approach in general. And the single RB with highest PSD allocated in RF BW edge is never agreed before for any IAB-MT requirement. For fixed IAB, it’s supposed that the behaviour would follow BS to a great extend with necessary UE functionality supported. That’s how the core RF requirement and most conformance testing discussion constructed in the past discussion.  |
| ZTE | **Issue 1-1-1: FR1 TDD split**Support option 2. **Issue 1-1-2: FR2 TDD split**Support option 2.**Issue 1-2: IAB-MT test configuration** To the follow the legacy BS approach. In addition, as mentioned by Samsung, single PRB with highest PSD allocated is not agreed in the past, therefore we disagree to add it in the test configuration. |
| Qualcomm | **Issue 1-2:**Option 1. Compliance should be enforced for a worst case scenario even if it is unlikely to happen in reality. It cannot be guaranteed it will not happen. |
| Huawei | **Issue 1-1-1:** Option 2**Issue 1-1-2:** Option 2**Issue 1-2:**  Option 2 |

**Example 2**

Sub topic 1-1

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

Sub topic 1-2

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

### CRs/TPs comments collection

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

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2111174 | Nokia: Comments to TP: - “The following clauses will describe the NR FR1 test models needed for IAB type 1-H. Note that the NR FR1 test models are also applicable to IAB type 1-O conformance testing in TS 38.141-2 [x].” – “IAB” instead of first instance “NR”?- clause 4.9.2.3: should we used “IAB-MT-FR1-TM” instead of “NR-IAB-MT FR1 TM”? to have alignment with IAB-DU naming- “Common physical channel parameters for all NR IAB-MT FR1 test models are specified in table 4.9.2.3-2 and table 4.9.2.3-3 for PUSCH. Specific physical channel parameters for NR FR1 IAB-MT test models are described in clauses 4.9.2.3.1 to 4.9.2.3.8.” – NR to be removed- “Common physical channel parameters are defined in clause 4.9.2.3. Specific physical channel parameters for NR-FR1-TM1.1 are defined in table 4.9.2.3.1-1.” - NR to be removed- Table 4.9.2.3.1-1: “NR” to be remove in table title.-“ Common physical channel parameters are defined in clause 4.9.2.3. Specific physical channel parameters for NR-FR1-TM2 are defined in table 4.9.2.3.2-1.” NR to be removed- clause 4.9.2.3.2: IAB-MT-FR1-TM2 should also be used for single RB test for at least OBUE requirements to ensure interference in adjacent operator´s network is acceptable- Table 4.9.2.3.2-1: “NR” to be removed |
| Company B |
|  |
| R4-2111205 |  Nokia: Comments to TP:- “The following clauses will describe the NR test models needed for IAB type 2-O. Note the NR FR1 test models described in TS 38.176-1 [3] are also applicable for IAB type 1-O conformance testing.” -“IAB” instead of first instance “NR”?- heading 4.9.2.2 and 4.9.2.3 – “NR” removal (also in conducted there is no “NR” in headings)- “The set-up of physical channels for transmitter tests shall be according to one of the NR test models (NR- IAB-MT-FR2-TM) below.” – “NR” removal, and replacing to “IAB” in first instance- “For NR FR2 TDD, test models are derived based on the uplink/downlink configuration as shown in the table 4.9.2.3-1 using information element TDD-UL-DL-ConfigCommon as defined in TS 38.331 [z].” – “NR” to “IAB” update?- heading 4.9.2.2.1– “NR” removal (also in conducted there is no “NR” in headings)- “Common physical channel parameters are defined in clause 4.9.2.3. Specific physical channel parameters for NR-FR2-TM1.1 are defined in table 4.9.2.3.1-1.” – “NR” removal- table 4.9.2.3.1-1 heading – “NR” removal- 4.9.2.3.2: “NR” removal for heading, and in text in this section- Similar comments to clause 4.9.2.3.2a, 4.9.2.3.3, 4.9.2.3.4 |
| Company B |
|  |
| R4-2109017 | Ericsson: ok |
| Nokia: In clause 4.7.5, should be 'outermost DL and UL carriers'  |
| Samsung: We would like to clarify that it seems in TP it is just mentioned “IAB RF Bandwidth” in general, however the declaration can be for MT and DU respectively. Hence even though the sub-clause is defined for IAB but still it should be applied for MT and DU respectively. |
| R4-2109018 | Ericsson: ok |
| Nokia: In clause 4.7.5, should be 'outermost DL and UL carriers' |
|  |

## 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:* |

### 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”* |

## Discussion on 2nd round (if applicable)

# Topic #2: Measurement issues

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2109831 | Nokia | IAB RF conformance test efficiency improvement**Proposal 1:** Declaration of the same beam direction is not necessary requirement for test efficiency improvement to apply.**Proposal 2:** Test efficiency improvement cannot be applied when IAB-DU and IAB-MT have difference class.**Proposal 3:** In the case of different TT for IAB-DU and IAB-MT, select the test requirement value with tighter TT**Proposal 4:** Adopt the test scope as captured in Table 1 to Table 4 when IAB-DU and IAB-MT use identical or shared RF HW.**Proposal 5**: Either group 1 or group 2 test split needs to be followed. When there is no indication and IAB-MT and IAB-DU test is interchangeable, it can be freely chosen whether IAB-MT or IAB-DU is tested.**Proposal 6:** Capture the rules of test efficiency improvement and overview tables of how the improvement can be applied in clause 4 of the specification |
| R4-2111179 | Ericsson | On IAB test case reduction for IAB Conducted conformance test**Observation#1:** Assume only TDM operation of the IAB-DU and IAB-MT for Rel-16 conformance testing.**Observation#2:** The TX test result of IAB-MT and IAB-DU is interchangeable when the test case procedure and side condition of the Tx output power are the same and the PUSCH and PDSCH use the same CP-OFDM waveform.**Observation#3:** The tighter TT for the same RF core requirement need to be reflected in the table.**Observation#4:** The test reduction for the different declared output power is limited for selected TX test requirement only.**Proposal:** RAN4 discuss the Table 1 and Table 2 for possible test case reduction.**Mod: A TP is provided based on these proposal for a new clause 4.x** |
| R4-2111180 | Ericsson | On IAB test case reduction for IAB OTA conformance test.**Observation#1:** Assume only TDM operation of the IAB-DU and IAB-MT for Rel-16 conformance testing.**Observation#2:** The TX test result of IAB-MT and IAB-DU is interchangeable when the test case procedure and side condition of the Tx output power are the same and the PUSCH and PDSCH use the same CP-OFDM waveform.**Observation#3:** There is no need on the same set of the declared directional beam as the same side condition and no need on test direction in general as one side condition.**Observation#4:** The tighter TT for the same RF core requirement need to be reflected in the table.**Observation#5:** The test reduction for the different declared output power is limited for selected TX test requirement only.**Proposal:** RAN4 discuss the Table 1 and Table 3 for possible test case reduction.**Mod: A TP is provided based on these proposal for a new clause 4.x** |
| R4-2110420 | Keysight | IAB-MT conformance Test about EVM annex text**Proposal;*** For allowing UE method, “Annex E in TS38.521” should be referred to. However, add description about calculation of EVM on CP-OFDM waveform of PUSCH, is only test and related description applicable for IAB-MT.
* We are OK with draft CR text in previous meeting (R4-2106040)
 |
| R4-2110578 | Keysight | IAB-MT conformance Test setup MUwe are OK with calculated values in WF [1] except;* For those test items which still under discussion on test itself, need to wait for conclusion.
* For radiated testing and mis-match term, it needs to be clarified that BS approach means to use assumption such, not to assume UE test setup type fully automated system.
 |
| R4-2111407 | Huawei | Discussion on MU values“the spreadsheet has been updated and attached to this zip file, with a view to getting agreement on each of the suggested MU values.” |
| R4-2111400 | Huawei | TP to TS 38.176-1 -Clause 4.1 |
| R4-2111401 | Huawei | TP to TS 38.176-2 -Clause 4.1 |

## Open issues summary

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

### Sub-topic 2-1 – Test efficiency

2 proposals provide tables with suggestions and conditions for test case reduction for shared IAB-DU and IAB-MT hardware. They share many similarities but also some differences. Both agree that in some cases the IAB-DU and IAB-MT are interchangeable. The exact conditions of that interchangeability needs further discussion. Some parameters listed to which conditions may apply include (list is not exhaustive just an indication):

* Beam directions
* Class
* Pout
* RF Bandwidth

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

**Issue 2-1-1: Conditions for interchanbility**

There are to many issues to list, propose continuing discussion based on the submitted tables. (I have started this in attached file)



* Proposals
	+ Option 1: Discuss based on contributions submitted tables.
	+ Option 2: TBA
* Recommended WF
	+ TBA

**-------GTW Note-------**

Nokia: We need to avoid only test IAB-DU. Sharing test cases among IAB-DU and MT need to be considered.

E///: We can consider using some text instead of introducing groups.

Huawei: We think we need to further discuss, the key point to avoid test not equivalent.

Further work on how to guarantee the sharing tests among IAB-DU and IAB-MT from test coverage aspect.

Agreement: Pout power, Class, RF Bandwidth should be same for test interchangbility.

How to handle medium range class FFS

FFS for beam direction

**Issue 2-1-2: Worst case TT**

Both papers agree the tighter TT should be used.

* Proposals
	+ Option 1: Test requirement with tighter TT
	+ Option 2: TBA
* Recommended WF
	+ Option 1

### Sub-topic 2-2 – MU values

2 Contributions have bene submitted, most of the proposed values in the WF from last meeting are accepatbe. With exception of requirements still under discussion

* + - 6.3.2.1 Tx total power dynamic range
		- 6.5.2.1 Tx Frequency error
		- 6.5.3 EVM, as it’s described in WF, if the power level to measure is not max then reduced power, need to use UE number

The spreadsheet has been updated to show agreement on these requirement MU values, at this stage it is still up for discussion not final agreement



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

*-----------------GTW Note-------------*

*Agreement:*

*Endorsed the values except dynamic range requirements, these values can be included in TPs. For tentative ones, including [ ] on it.*

**Issue 2-2: MU values**

* Proposals
	+ Option 1: continue commenting on the MU spreadsheet
	+ Option 2: TBA
* Recommended WF
	+ TBA

### Sub-topic 2-3 – EVM annex text

Proposal for annex text

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

**Issue 2-3: EVM annex text**

* Proposals
	+ Option 1: Update annex according to R4-2110420
	+ Option 2: TBA
* Recommended WF

## Companies views’ collection for 1st round

### Open issues

**Example 1**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX | Sub topic 1-1: Sub topic 1-2:….Others: |
| CATT | **Issue 2-1-1: Conditions for interchanbility**We see two discussion points for this topic. First is which requirements can have test reduction, a table similar with Ericsson’s table may be used as a starting point. Second is the reduction approach, following Ericsson’s proposal or Nokia’s proposal. We slightly prefer Ericsson’s approach since we’re discussing reducing test efforts, only testing one function can save the effort of set up the test environment, etc.**Issue 2-1-2: Worst case TT**Support option 1, but may need to be careful to check case by case what’s the source of the different TT and if there’re difficulties for the chosen test method.**Issue 2-3: EVM annex text**This seems to be the proposal for TS 38.174. But it seems the draft CR in last meeting is ok. |
| Ericsson | **Issue 2-1-1: Conditions for interchanbility****On the test condition:** **Beam direction:most likely the beam direction could be declared as the same, even differently, it is the same panel and BS approach should cover the other directions to work well though test is a few to save test effort. So we donot think it is necessary to be necessity condition.****Class: as the different class IAB-MT and IAB-DU would mean there are requirement difference, the test condition will not be exactly the same, so more discussion will be needed for this case.****For the Nokia table, not sure the group 1 and group 2 is necessary as the result is interchangable, above all, there is no grouping rule so would make it difficult to agree which one should be set in withi group.****Issue 2-1-2: Worst case TT****Option 1 is ok.**issue 2-2 – MU values**When the MU for IAB-MT is different with MU of IAB-DU for the same requirement, should we make an exception that it is only applied when UE system simulator is used. When the same test environment is ensured for IAB-MT and IAB-DU, the same MU should be the applied. Thus if there is case to negotiate with regulator about the test MU, at least it will be easier for the shared hardware case. If we could agree, a note to the MU where IAB-MT and IAB-DU differ would be necessary. And it would be the same for TT.** **The proposal ( tentative ) in spread sheet look fine to us. On top of that, we suggest o make a note so IAB\_MT can have different MU depending on which test environment is used.** **Issue 2-3: EVM annex text****Option 1 is ok,** |
| Nokia | Issue 2-1-1: Some comments and questions for clarification:1. It seems Ericsson proposal does not require same output power to be declared – how the RF could then be same?
2. If understood correctly, Ericsson proposal for Tx requirements allows not to test IAB-MT at all, right?
3. For Rx Ericsson proposes MT requirement for OOB blocking – but here test is the same with DU. MT should be used for ACS, in-band blocking, Rx IMD instead.
4. Would Rx side condition require declaration of same sensitivity? Maybe within small range is fine as FRC and waveform is different

Issue 2-1-2: We support recommended WF (option 1).Issue 2-3: OK with option 1 (already reflected in draft CR in thread 305) |
| Samsung  | **Issue 2-1-1: Conditions for interchanbility**It seems regarding the beam direction views in contributions provided for this meeting align well that: no need to include the same beam directions declared by MT and DU as criteria for testing reduction.For class and Pout, it seems equivalent to some extent, as Pout can be further request on top of class. These two factor and RF bandwidth should be included as criteria for testing reduction.  |
| ZTE | **I**ssue 2-2: MU valuesNo strong opinions on Mu values.Issue 2-3: OK with option 1 |
| Keysight | **Issue 2-2: MU values****For FR2 Rx OOB number, error found on math defined in TR37.941 and correction proposed in discussion 302 (R4-2111504, additional note, value proposed in this tdoc has calc error and for BS, corrected value is 3.6, see 302 discussion doc). With this correction, FR2 IAB-MT Rx OOB number should be 4.4 (rather 4.7)****Comment also added embedded spreadsheet** |
| Huawei | **Issue 2-1-1:** If the test are truly equivalent (or one is worst case) then it seems there is no need to allocate test condition to IAB-Du or IAB-MT (so the group columns in the Nokia table seem unnecessary), although it should be clear in these situations which requirements should be tested. As the IAB-Du MU are often tighter it might be good to just select that. If the HW is the same we think its probably the output power declaration should be the same so the different Pout option seems not to be valid for interchangeability, same RF BW seems applicable. Directions are similar to power, if the HW is identical then why would the directions not be? IN and case the more extreme direction should be selected.**Issue 2-1-2 :** WF ok**Issue 2-2:** To Keysight – correction is good thanks ( I found error in the recalculation for the NR maintenance but this one seems ok). To Ericsson, I don’t think we should link the MU to the test equipment, its either acceptable or not. Maybe we could add a note saying why the IAB-MT figures are larger in some cases but we should have variable MU. Based on comments so far it seems we can approved the MU tables in the latest spreadsheets – maybe we can do this in GTW. |

**Example 2**

Sub topic 1-1

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

Sub topic 1-2

|  |  |
| --- | --- |
| **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** |
| R4-2111179 | Nokia: As such it is good idea to add new tables in clause 4, but we need to agree on the concept first. Also proposed table is unclear. It could be useful to have more text before the table to explain a bit more what is meant instead of repeating the content of tighter TT or declaring same BW for every requirement within the table. Also comments/questions as provide above for issue 2-1-1 |
| Huawei: Agree its good to add his section but need more agreement as to content – maybe we can use a revision of this TP to work on that? |
|  |
| R4-2111180 | Nokia: similar comments as for above R4-2111179. |
| Huawei: Agree its good to add his section but need more agreement as to content – maybe we can use a revision of this TP to work on that? |
|  |
| R4-2111400 | Ericsson: OK |
| Nokia: 6.6.2 Occupied bandwidth in table 4.1.2.2-1: “10 MHz BS Channel BW: ±100 kHz” should it be IAB Channel BW? |
| Huawei: Nokia yes thanks will revise., - the MU tables seem to be agreed now (I hope) so values should be ok now |
| R4-2111401 | Ericsson: Ok, this relate to MU discussion in issue 2-2. |
| Nokia: OK |
| Huawei: MU tables seem to be stable now, need to update based on Keysight modification. |

## 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:* |

### CRs/TPs

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

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

## Discussion on 2nd round (if applicable)

*Moderator can provide summary of 2nd round here. Note that recommended decisions on tdocs should be provided in the section titled ”Recommendations for Tdocs”.*

# Topic #2: General TP’s

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2110926 | Qualcomm | TP to TS 38.176-1 – Clause 3 {Definition of terms symbols and abbreviation} |
| R4-2109020 | CATT | TP for TS 38.176-1: Annex B and Annex C{Environmental requirements and Test tolerances} |
| R4-2109022 | CATT | TP for TS 38.176-2: Annex B and Annex C{Environmental requirements and Test tolerances} |

## Open issues summary

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

All papers are TP’s so no open issues as such, comment on TP’s directly

## Companies views’ collection for 1st round

### Open issues

### CRs/TPs comments collection

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

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2109261 | CATT:SSB\_RP Received (linear) average power of the resource elements that carry NR SSB signals and channels, measured at the UE antenna connector.It seems “UE” should be changed to “IAB-MT”, but not sure how to call it for type 1-H in RRM session. And there’s also a problem for TS 38.174. |
| Nokia: There is also proposed clause 3 text in Editor update, thus would be good to not overlap TPs. |
| Samsung: two more definitions of “IAB-DU channel bandiwdth” and “IAB-MT channel bandwidth” are agreed to be introduced in R4-2106042 for TS38.174 which can be included in conformance testing spec as well. |
| Huawei: This is a good start but I think its easier of the terms and abbreviations are added in an editor clean up as it requires going through the document and checking usage etc. |
| R4-2109020 | Ericsson: Better align with 4.1.2 with MU discussion |
| Huawei: Values are probably aligned with current MU spreadsheet, some requirements are IAB-MT specific, this is not captured. Probably use same rows as the tables in 4.1.2 is good approach. |
|  |
| R4-2109022 | Ericsson: B.7 , there are figure where “NR BS” stated. Is that possible to modify the picture? |
| Huawei: AS with previous align the rows with the MU tables in 4.1.2.I have the originals of the diagrams and can help replace the NR BS test if that helps |
|  |

## 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:* |

### CRs/TPs

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

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

## Discussion on 2nd round (if applicable)

*Moderator can provide summary of 2nd round here. Note that recommended decisions on tdocs should be provided in the section titled ”Recommendations for Tdocs”.*

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |
| --- | --- | --- |
| **Title** | **Source** | **Comments** |
| WF on … | YYY |  |
| LS on … | ZZZ | To: RAN\_X; Cc: RAN\_Y |
|  |  |  |

**Existing tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation**  | **Comments** |
|  | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-2110139 | TDD pattern for IAB test models | Nokia |  |  |
| R4-2110140 | Discussion on IAB test configurations with TPs to 38.176-1 and 38.176-2 | Nokia |  |  |
| R4-2111174 | IAB Common test issue on test model-Conducted | Ericsson |  |  |
| R4-2111205 | IAB Common test issue on test model-OTA | Ericsson |  |  |
| R4-2111398 | Discussion on Test models and Test configurations | Huawei |  |  |
| R4-2109017 | TP for TS 38.176-1: Test configurations and applicability of requirements | CATT |  |  |
| R4-2109018 | TP for TS 38.176-2: Test configurations and applicability of requirements | CATT |  |  |
| R4-2109831 | IAB RF conformance test efficiency improvement | Nokia |  |  |
| R4-2111179 | On IAB test case reduction for IAB Conducted conformance test | Ericsson |  |  |
| R4-2111180 | On IAB test case reduction for IAB OTA conformance test. | Ericsson |  |  |
| R4-2110420 | IAB-MT conformance Test about EVM annex text | Keysight |  |  |
| R4-2110578 | IAB-MT conformance Test setup MU | Keysight |  |  |
| R4-2111407 | Discussion on MU values | Huawei |  |  |
| R4-2111400 | TP to TS 38.176-1 -Clause 4.1 | Huawei |  |  |
| R4-2111401 | TP to TS 38.176-2 -Clause 4.1 | Huawei |  |  |
| R4-2110926 | TP to TS 38.176-1 – Clause 3 | Qualcomm |  |  |
| R4-2109020 | TP for TS 38.176-1: Annex B and C | CATT |  |  |
| R4-2109022 | TP for TS 38.176-2: Annex B and C | CATT |  |  |

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