**3GPP TSG-RAN WG4 Meeting #95-e DRAFT R4-2008801**

Online, 25 May - 05 Jun 2020

**Source:** Huawei

**Title:** TP to TS 38.174: Rx Dynamic range

**Agenda Item:** 6.5.2.2.3

**Document for:** Approval

# Introduction

The sub-clauses in the TS have been allocated to different companies to aid the drafting process, in the last meeting a TP to the TS was submitted for TX dynamic range was submitted by ourselves. Other TP’s covering other sub-classes were also submitted by the allocated authors.

Whilst in most cases the technical content of the TP’s was not questioned the vastly different approaches to referencing meant that the consistency between the TP;’s was low and would result in a inconstant overall specification.

Whilst some ground rules for referencing were agreed in R4-2002484, they have been interpreted differently. The agreements are listed below with numbers so they can be more easily pointed to

1. Decision whether to reference will be taken case by case following the rules in this slide
2. The examples in this slide are meant to illustrate the meaning, not to agree exact wording to be used in the specification.
3. Referencing can be done only if requirement is the same, meaning that requirement values and principles are the same
   1. Exact words do not need to be same. As a theoretical example, it can be said that ”BS type 2-O requirements in sub-clause x.x.x [ref X] apply for IAB-DU”
   2. Referencing shall not be done if requirements are different, i.e. value or principle differs.
   3. If referencing is used all node specific text and definitions must be clarified (for example: Where ”base station RF bandwidth” is replaced by ”IAB-DU RF bandwidth”)
   4. Specific references must be made to versioned documents
4. Referencing is not recommended if it results in a partial requirement
   1. As a theoretical example, this means a case where specification would say ” BS type 2-O requirements in sub-clause x.x.x [ref X] apply for IAB-DU. In addition IAB-DU shall meet….”
5. Referencing is not recommended if a complete specification sub-clause cannot be referenced
   1. No referencing when it results in formulation ”BS type 2-O requirements in clause x.x.x [ref X] except [bad requirement] will apply for IAB-DU”
   2. No referencing of individual tables or figures
6. Referencing sub-clauses where requirements apply for frequencies which are not IAB frequencies is TBD
   1. UE and BS specification shave many requirements which are band specific and result in tables containing many bands, its not clear if these sub-clauses should be referenced. This could be similar to the ”partial requirement” bullet above

Out approach has been to avoid referencing if the meaning of the referenced text could be unclear and has resulted in a clause with most of the text copied out in full and modified.

Others have taken a different view and referenced wherever possible.

The TP for the RX dynamic range has been re-written in an attempt to use referencing more to align with some of the other contributions (although it is hoped that other contributions will also be updated so a compromise between the extreme can be found.

Currently it has been agreed that the IAB-DU will use the same requirements as the BS, this has been implemented and the class 1-C node has been removed as we do not have a 1-C IAB node.

For the IAB-MT it is agreed that there will be no FR2 requirement – this is the same as the BS, however in the BS spec there is no explicit statement of this – there is just no requirement present. The same method has been employed in this TP.

No agreement has been made on FR1 IAB\_MT Rx dynamic range so this is left out for now.

The TP was reviewed in the 1st round of RAN4#95e and the following comments were received:

|  |
| --- |
| Ericsson: ok |
| Nokia: Similar observations on the style as for R4-2007907.  Huawei: Ther are still differing views on these matters, for this TP we can adopt the same method we agree on 7907  To our understanding NB-IoT requirements are included only for conducted requirements in TS 38.104, so IAB-DU type 1-O does not need to mention anything about NB-IoT.  Huawei: OK |
| Samsung: We have already agreed that no FR2 IAB-MT dynamic range. But the RX dynamic range is still open as FFS. More discussion on this aspect needed.  Huawei: The IAB-MT is not addressed in this TP yet. As we don’t know if FR1 dynamic range is needed then it’s difficult to capture the FR2 agreements (as if both the same we don’t need to separated, if different then we do) |

# TP to TS 38.174 v0.0.1

**--- Start of changes ---**

# References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[x] 3GPP TS 38.104 (V16.3.0): “NR; Base Station (BS) radio transmission and reception”

**--- Next change ---**

## 7.3 Dynamic range

### 7.3.1 IAB-DU dynamic range

#### 7.3.1.1 General

The dynamic range is specified as a measure of the capability of the receiver to receive a wanted signal in the presence of an interfering signal at the *antenna connector* for *IAB-DU type 1-C* or *TAB connector* for *IAB-DU type 1-H* inside the received *[IAB-DU] channel bandwidth*. In this condition, a throughput requirement shall be met for a specified reference measurement channel. The interfering signal for the dynamic range requirement is an AWGN signal.

#### 7.3.1.2 Minimum requirement for *IAB-DU type 1-H*

The wide area IAB-DU dynamic range is specified the same as the wide area BS dynamic requirement for BS *type 1-H* in TS 38.104x[x], subclause 7.3.2, where references to *BS channel bandwidth* apply to *IAB-DU channel bandwidth*.

The medium range IAB-DU dynamic range is specified the same as the medium range BS dynamic range requirement for BS *type 1-H* in TS 38.104x[x], subclause 7.3.2, where references to *BS channel bandwidth* apply to *IAB-DU channel bandwidth*.

The local area IAB-DU dynamic range is specified the same as the local area BS dynamic range requirement for BS *type 1-H* in TS 38.104x[x], subclause 7.3.2, where references to *BS channel bandwidth* apply to *IAB-DU channel bandwidth*.

Referenced requirements applying to NB IoT are not applicable to the IAB-DU

### 7.3.2 IAB-MT dynamic range

Detailed structure of the subclause is TBD.

**--- Next change ---**

## 10.4 OTA Dynamic range

### 10.4.1 IAB-DU OTA dynamic range

### 10.4.1.1 General

The OTA dynamic range is a measure of the capability of the receiver unit to receive a wanted signal in the presence of an interfering signal inside the received *[IAB-DU] channel bandwidth*.

The requirement shall apply at the RIB when the AoA of the incident wave of a received signal and the interfering signal are from the same direction and are within the *OTA REFSENS RoAoA.*

The wanted and interfering signals apply to each supported polarization, under the assumption of *polarization match*.

### 10.4.1.2 Minimum requirement for *IAB-DU type 1-O*

The wide area IAB-DU dynamic range is specified the same as the wide area BS dynamic requirement for BS *type 1-H* in TS 38.104x[x], subclause 10.4.2, where references to *BS channel bandwidth* apply to *IAB-DU channel bandwidth*.

The medium range IAB-DU dynamic range is specified the same as the medium range BS dynamic range requirement for BS *type 1-H* in TS 38.104x[x], subclause 10.4.2, where references to *BS channel bandwidth* apply to *IAB-DU channel bandwidth*.

The local area IAB-DU dynamic range is specified the same as the local area BS dynamic range requirement for BS *type 1-H* in TS 38.104x[x], subclause 10.4.2, where references to *BS channel bandwidth* apply to *IAB-DU channel bandwidth*.

### 10.4.2 IAB-MT OTA dynamic range

Detailed structure of the subclause is TBD.

**--- End of changes ---**