**3GPP TSG-RAN WG4 Meeting #98-e R4-210xxxx**

Online, 12 - 20 Apr 2021

**Source:** Huawei

**Title:** TP to TS 38.176-2 - Annex D&E

**Agenda Item:** 5.3.2.4.3.

**Document for:** Approval

# Introduction

This is a revision of R4-2107105 after 1st round review in RAN4#98e-bis, the following corrections have been made

The performance section has been removed for now as the performance work has not started so the test set up diagrams are perhaps premature.

BS remains from the original text in some places and is replaced with IAB as appropriate.

This text proposal completes Annex D and E of the OTA test specification.

The text is based on the NR BS test spec TS 38.141-2 and the core requirements in the IAB spec TS 38.174.

The following modifications have been made:

* Potential additional test set ups for IAB-MT specific tests have not yet been added, they can be considered based on the content in the test procedures.
* Test set ups are very general and do not include control interfaces for test set up, they should be in line with the test system agnostic agreement made in R4-2103853
* The diagrams in E.3 have been updated to change the DUT to an IAB, they are otherwise unchanged, further work may be needed from demod group?

# TP to TS 38.176-2 v0.0.1

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

Annex D (normative):
Calibration

OTA test requirements specific and OTA measurement chamber specific calibration (and measurement) procedures were captured in TR 37.941 [29] for the following requirements sets:

- TX and Rx directional requirements

- In-band and out-of-band TRP requirements

- Co-location requirements

- In-band and out-of-band blocking requirements

All the calibrations procedures in TR 37.941 [29] for the BS are assumed to be also applicable to *IAB type 1-H* and *IAB type 1-O* for the FR1 frequency range (i.e. up to 6 GHz), as well as for *IAB type 2-O* for the FR2 frequency range, unless stated otherwise.

Annex E (informative):
OTA measurement system set-up

# E.1 Transmitter

## E.1.1 Radiated transmit power, OTA output power dynamics, OTA transmitted signal quality, OTA occupied bandwidth, and OTA transmit ON/OFF power (*IAB type 2-O*)



Figure E.1.1-1: Measurement set up for radiated transmit power, OTA output power dynamics, OTA transmitted signal quality, OTA occupied bandwidth, and OTA transmit ON/OFF power (*IAB type 2-O*)

The OTA chamber shown in figure E.1.1-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, Near field chamber, etc.)

## E.1.2 OTA base station output power, OTA ACLR, OTA operating band unwanted emissions



Figure E.1.2-1: Measurement set up for OTA IAB output power, OTA ACLR, OTA operating band unwanted emissions

The OTA chamber shown in figure E.1.2-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, Near field chamber, etc.)

## E.1.3 OTA spurious emissions



Figure E.1.3-1: Measurement set up for OTA spurious emissions

The OTA chamber shown in figure E.1.3-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.).

## E.1.4 OTA co-location emissions, OTA transmit ON/OFF power (*IAB type 1-O*)



Figure E.1.4-1: Measurement set up for OTA co-location emissions, OTA transmit ON/OFF power (*IAB type 1-O*)

The OTA chamber shown in figure E.1.4-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, Near field chamber, etc.)

## E.1.5 OTA transmitter intermodulation



Figure E.1.5-1: Measurement set up for OTA transmitter intermodulation

The OTA chamber shown in figure E.1.5-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.). When injecting the interferer signal into the CLTA ports, a splitter might be needed. For testing emission far out-of-band an additional test antenna might be needed.

# E.2 Receiver

## E.2.1 OTA sensitivity and OTA reference sensitivity level



Figure E.2.1-1: Measurement set up for OTA sensitivity and OTA reference sensitivity level

The OTA chamber shown in figure E.2.1-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.).

## E.2.2 OTA dynamic range



Figure E.2.2-1: Measurement set up for OTA dynamic range

The OTA chamber shown in figure E.2.2-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.).

## E.2.3 OTA adjacent channel selectivity, general OTA blocking, and OTA narrowband blocking



Figure E.2.3-1: Measurement set up for OTA ACS and OTA narrowband blocking

The OTA chamber shown in figure E.2.3-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.).



Figure E.2.3-2: Measurement set up for general OTA blocking

The OTA chamber shown in figure E.2.3-2 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.).

## E.2.4 OTA blocking

### E.2.4.1 General OTA out-of-band blocking



Figure E.2.4.1-1: Measurement set up for general OTA out-of-band blocking

The OTA chamber shown in figure E.2.4.1-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.).

### E.2.4.2 OTA co-location blocking



Figure E.2.4.2-1: Measurement set up for OTA co-location blocking

The OTA chamber shown in figure E.2.4.2-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.). For testing blocking far out-of-band several CLTAs might be needed.

## E.2.5 OTA receiver spurious emissions



Figure E.2.5-1: Measurement set up for OTA receiver spurious emissions

The OTA chamber shown in figure E.2.5-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.).

## E.2.6 OTA receiver intermodulation

 

Figure E.2.6-1: Measurement set up for OTA receiver intermodulation

The OTA chamber shown in figure E.2.6-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.).

## E.2.7 OTA in-channel selectivity

 

Figure E.2.7-1: Measurement set up for OTA in-channel selectivity

The OTA chamber shown in figure E.2.7-1 is intended to be generic and can be replaced with any suitable OTA chamber (Far field anechoic chamber, CATR, etc.).

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