3GPP TSG-RAN WG4 Meeting #98-bis-e R4-2106441

Electronic, 12nd – 20th April, 2021

**Agenda item:** **5.3.5.1**

**Source: Intel Corporation**

**Title: Big TP to TS 38.176-1: IAB demodulation performance requirements**

**Document for: Approval**

# 1 Introduction

As discussed in [1], we proposed the following TP to TS 38.176-1 as the first step to define conducted performance requirements for IAB nodes.

# 2 Text Proposal to TS 38.176-1

**Start of the text proposal**

## 8.1 IAB DU performance requirements

### 8.1.1 General

### 8.1.2 Performance requirements for PUSCH

#### 8.1.2.1 Performance requirements for PUSCH with transform precoding disabled

##### 8.1.2.1.1 Definition and applicability

##### 8.1.2.1.2 Minimum requirement

##### 8.1.2.1.3 Test purpose

##### 8.1.2.1.4 Method of test

###### 8.1.2.1.4.1 Initial conditions

###### 8.1.2.1.4.2 Test procedure

##### 8.1.2.1.5 Test requirement

#### 8.1.2.2 Performance requirements for PUSCH with transform precoding enabled

##### 8.1.2.2.1 Definition and applicability

##### 8.1.2.2.2 Minimum requirement

##### 8.1.2.2.3 Test purpose

##### 8.1.2.2.4 Method of test

###### 8.1.2.2.4.1 Initial conditions

###### 8.1.2.2.4.2 Test procedure

##### 8.1.2.2.5 Test requirement

#### 8.1.2.3 Performance requirements for UCI multiplexed on PUSCH

##### 8.1.2.3.1 Definition and applicability

##### 8.1.2.3.2 Minimum requirement

##### 8.1.2.3.3 Test purpose

##### 8.1.2.3.4 Method of test

###### 8.1.2.3.4.1 Initial conditions

###### 8.1.2.3.4.2 Test procedure

##### 8.1.2.3.5 Test requirement

### 8.1.3 Performance requirements for PUCCH

#### 8.1.3.1 Performance requirements for PUCCH format 0

##### 8.1.3.1.1 Definition and applicability

##### 8.1.3.1.2 Minimum requirement

##### 8.1.3.1.3 Test purpose

##### 8.1.3.1.4 Method of test

###### 8.1.3.1.4.1 Initial conditions

###### 8.1.3.1.4.2 Test procedure

##### 8.1.3.1.5 Test requirement

#### 8.1.3.2 Performance requirements for PUCCH format 1

##### 8.1.3.2.1 NACK to ACK detection

###### 8.1.3.2.1.1 Definition and applicability

###### 8.1.3.2.1.2 Minimum requirement

###### 8.1.3.2.1.3 Test purpose

###### 8.1.3.2.1.4 Method of test

8.1.3.2.1.4.1 Initial conditions

8.1.3.2.1.4.2 Test procedure

###### 8.1.3.2.1.5 Test requirement

##### 8.1.3.2.2 ACK missed detection

###### 8.1.3.2.2.1 Definition and applicability

###### 8.1.3.2.2.2 Minimum requirement

###### 8.1.3.2.2.3 Test purpose

###### 8.1.3.2.2.4 Method of test

8.1.3.2.2.4.1 Initial conditions

8.1.3.2.2.4.2 Test procedure

###### 8.1.3.2.2.5 Test requirement

#### 8.1.3.3 Performance requirements for PUCCH format 2

##### 8.1.3.3.1 ACK missed detection

###### 8.1.3.3.1.1 Definition and applicability

###### 8.1.3.3.1.2 Minimum requirement

###### 8.1.3.3.1.3 Test purpose

###### 8.1.3.3.1.4 Method of test

8.1.3.3.1.4.1 Initial conditions

8.1.3.3.1.4.2 Test procedure

###### 8.1.3.3.1.5 Test requirement

##### 8.1.3.3.2 UCI BLER performance requirements

###### 8.1.3.3.2.1 Definition and applicability

###### 8.1.3.3.2.2 Minimum requirement

###### 8.1.3.3.2.3 Test purpose

###### 8.1.3.3.2.4 Method of test

8.1.3.3.2.4.1 Initial conditions

8.1.3.3.2.4.2 Test procedure

###### 8.1.3.3.2.5 Test requirement

#### 8.1.3.4 Performance requirements for PUCCH format 3

##### 8.1.3.4.1 Definition and applicability

##### 8.1.3.4.2 Minimum requirement

##### 8.1.3.4.3 Test purpose

##### 8.1.3.4.4 Method of test

###### 8.1.3.4.4.1 Initial conditions

###### 8.1.3.4.4.2 Test procedure

##### 8.1.3.4.5 Test requirement

#### 8.1.3.5 Performance requirements for PUCCH format 4

##### 8.1.3.5.1 Definition and applicability

##### 8.1.3.5.2 Minimum requirement

##### 8.1.3.5.3 Test purpose

##### 8.1.3.5.4 Method of test

###### 8.1.3.5.4.1 Initial conditions

###### 8.1.3.5.4.2 Test procedure

##### 8.1.3.5.5 Test requirement

#### 8.1.3.6 Performance requirements for multi-slot PUCCH

##### 8.1.3.6.1 NACK to ACK detection

###### 8.1.3.6.1.1 Definition and applicability

###### 8.1.3.6.1.2 Minimum requirement

###### 8.1.3.6.1.3 Test purpose

###### 8.1.3.6.1.4 Method of test

8.1.3.6.1.4.1 Initial conditions

8.1.3.6.1.4.2 Test procedure

###### 8.1.3.6.1.5 Test requirement

##### 8.1.3.6.2 ACK missed detection

###### 8.1.3.6.2.1 Definition and applicability

###### 8.1.3.6.2.2 Minimum requirement

###### 8.1.3.6.2.3 Test purpose

###### 8.1.3.6.2.4 Method of test

8.1.3.6.2.4.1 Initial conditions

8.1.3.6.2.4.2 Test procedure

###### 8.1.3.6.2.5 Test requirement

### 8.1.4 Performance requirements for PRACH

#### 8.1.4.1 PRACH false alarm probability and missed detection requirements

##### 8.1.4.1.1 Definition and applicability

##### 8.1.4.1.2 Minimum requirement

##### 8.1.4.1.3 Test purpose

##### 8.1.4.1.4 Method of test

###### 8.1.4.1.4.1 Initial conditions

###### 8.1.4.1.4.2 Test procedure

##### 8.1.4.1.5 Test requirement

## 8.2 IAB MT performance requirements

### 8.2.1 General

### 8.2.2 Demodulation performance requirements

#### 8.2.2.1 Performance requirements for PDSCH

##### 8.2.2.1.1 Definition and applicability

##### 8.2.2.1.2 Minimum requirement

##### 8.2.2.1.3 Test purpose

##### 8.2.2.1.4 Method of test

###### 8.2.2.1.4.1 Initial conditions

###### 8.2.2.1.4.2 Test procedure

##### 8.2.2.1.5 Test requirement

#### 8.2.2.2 Performance requirements for PDCCH

##### 8.2.2.2.1 Definition and applicability

##### 8.2.2.2.2 Minimum requirement

##### 8.2.2.2.3 Test purpose

##### 8.2.2.2.4 Method of test

###### 8.2.2.2.4.1 Initial conditions

###### 8.2.2.2.4.2 Test procedure

##### 8.2.2.2.5 Test requirement

### 8.2.3 CSI reporting requirements

#### 8.2.3.1 Reporting of Channel Quality Indicator (CQI)

##### 8.2.3.1.1 Definition and applicability

##### 8.2.3.1.2 Minimum requirement

##### 8.2.3.1.3 Test purpose

##### 8.2.3.1.4 Method of test

###### 8.2.3.1.4.1 Initial conditions

###### 8.2.3.1.4.2 Test procedure

##### 8.2.3.1.5 Test requirement

#### 8.2.3.2 Reporting of Precoding Matrix Indicator (PMI)

##### 8.2.3.2.1 Definition and applicability

##### 8.2.3.2.2 Minimum requirement

##### 8.2.3.2.3 Test purpose

##### 8.2.3.2.4 Method of test

###### 8.2.3.2.4.1 Initial conditions

###### 8.2.3.2.4.2 Test procedure

##### 8.2.3.2.5 Test requirement

#### 8.2.3.3 Reporting of Rank Indicator (RI)

##### 8.2.3.3.1 Definition and applicability

##### 8.2.3.3.2 Minimum requirement

##### 8.2.3.3.3 Test purpose

##### 8.2.3.3.4 Method of test

###### 8.2.3.3.4.1 Initial conditions

###### 8.2.3.3.4.2 Test procedure

##### 8.2.3.3.5 Test requirement

# A.2 IAB-DU Fixed Reference Channels

## A.2.1 Fixed Reference Channels for PUSCH performance requirements (QPSK, R = 193/1024)

## A.2.2 Fixed Reference Channels for PUSCH performance requirements (16QAM, R = 434/1024)

## A.2.3 Fixed Reference Channels for PUSCH performance requirements (16QAM, R = 658/1024)

## A.2.4 Fixed Reference Channels for PUSCH performance requirements (64QAM, R = 567/1024)

## A.2.5 PRACH test preambles

# A.3 IAB-MT Fixed Reference Channels

## A.2.1 Fixed Reference Channels for PDSCH performance requirements (16QAM)

## A.2.2 Fixed Reference Channels for PDSCH performance requirements (64QAM)

## A.2.3 Fixed Reference Channels for PDSCH performance requirements (256QAM)

## A.2.4 Fixed Reference Channels for PDCCH performance requirements

## A.2.5 Fixed Reference Channels for CSI reporting performance requirements

# C.3 Measurement of performance requirements

# D.6 Measurement set-up IAB-MT and IAB-DU performance requirements

Annex G (normative):  
Propagation conditions

**End of the text proposal**

# References

1. R4-2103994 “WF on Rel-16 NR IAB demodulation requirements”, Nokia, Nokia Shanghai Bell, RAN4 #98e, February 2021