3GPP TSG RAN WG4#96-e R4-201XXXX

Electronic meeting, August 17th – 28th, 2020

**Source:** Nokia, Nokia Shanghai Bell

**Title:** TP for TS 38.174: IAB-MT Pcmax and power control

**Agenda item:** 7.4.2.2.1

**Document for:**  Approval

# 1 Introduction

A text proposal to TS 38.174 is provided based on discussion and agreements during RAN4#96-e.

# 2 References

<Start of text proposal>

## 6.2 IAB output power

## 6.2.X Local Area *IAB-MT type 1-H* configured output power

The configured maximum output power PCMAX,f,c for carrier f of serving cell c is

Pmax,c,TABC - 2.5 dB ≤ PCMAX,f,c ≤ Pmax,c,TABC + 2.5 dB

Pmax,c,TABC is declaredby manufacturer.

NOTE: Multiple different declarations for Pmax,c,TABC may be allowed according to the side conditions specified in [TS 38.XXX [X]].

## 6.3 Output power dynamics

### 6.3.X Power control

#### 6.3.X.1 Relative power tolerance for local area IAB-MT type 1-H

The relative power tolerance is the ability of the transmitter to set its output power in a target sub-frame (1 ms) relatively to the power of the most recently transmitted reference sub-frame (1 ms) if the transmission gap between these sub-frames is less than or equal to 20 ms.

The minimum requirements specified for each *TAB-connector* in Table 6.3.X.1-1 apply only when the output power is within the limits set by declared maximum output power and specified dynamic range.

2 exceptions are allowed for each of two test patterns. The test patterns are a monotonically increasing power sweep and a monotonically decreasing power sweep. For those exceptions, the power tolerance limit is a maximum of ± 6.0 dB in Table 6.3.X.1-1.

Table 6.3.X.1-1: Relative power tolerance

|  |  |
| --- | --- |
| Power step P (Up or down) (dB) | Power tolerance (dB) |
| ΔP < 2 | ± 2.5 |
| 2 ≤ ΔP < 3 | ± 3.5 |
| 3 ≤ ΔP < 4 | ± 4.5 |
| 4 ≤ ΔP < 10 | ± 5.5 |

#### 6.3.X.2 Aggregate power tolerance for local area IAB-MT type 1-H

The aggregate power control tolerance is the ability of the transmitter to maintain its power in a sub-frame (1 ms) during non-contiguous transmissions within 21 ms in response to 0 dB commands with respect to the first transmission and all other power control parameters as specified in TS 38.213 [8] kept constant.

The minimum requirements specified for each *TAB-connector* in Table 6.3.X.2-1 apply only when the output power is within the limits set by declared maximum output power and specified dynamic range.

Table 6.3.X.2-1: Aggregate power tolerance

|  |  |  |
| --- | --- | --- |
| TPC command | UL channel | Aggregate power tolerance within 21 ms |
| 0 dB | PUCCH | ± 2.5 dB |
| 0 dB | PUSCH | ± 3.5 dB |

<Unchanged sections omitted>

## 9.2 Radiated transmit power

## 9.2.X Configured radiated output power

## 9.2.X.1 Local area IAB-MT type 1-O configured output power

The configured maximum output power PCMAX,f,c for carrier f of serving cell c is

Pmax,c,EIRP - 2.7 dB ≤ PCMAX,f,c ≤ Pmax,c,EIRP + 2.7 dB

Pmax,c,EIRP is declaredby manufacturer.

NOTE: Multiple different declarations for Pmax,c,EIRP may be allowed according to the side conditions specified in [TS 38.XXX [X]].

## 9.2.X.2 Local area IAB-MT type 2-O configured output power

The configured maximum output power PCMAX,f,c for carrier f of serving cell c is

Pmax,c,EIRP – 4.5 dB ≤ PCMAX,f,c ≤ Pmax,c,EIRP + 4.5 dB

Pmax,c,EIRP is declaredby manufacturer.

NOTE: Multiple different declarations for Pmax,c,EIRP may be allowed according to the side conditions specified in [TS 38.XXX [X]].

## 9.3 IAB output power

## 9.4 OTA output power dynamics

### 9.4.X Power control

#### 9.4.X.1 Power control for local area IAB-MT type 1-O

##### 9.4.X.1.1 Relative EIRP tolerance for local area IAB-MT type 1-O

The relative EIRP tolerance is the ability of the transmitter to set its radiated output power in a target sub-frame (1 ms) relatively to the power of the most recently transmitted reference sub-frame (1 ms) if the transmission gap between these sub-frames is 20 ms.

The minimum requirements specified in Table 9.4.X.1.1-1 apply only when the output power is within the limits set by declared maximum output power and specified dynamic range.

2 exceptions are allowed for each of two test patterns. The test patterns are a monotonically increasing power sweep and a monotonically decreasing power sweep. For those exceptions, the power tolerance limit is a maximum of ± 11.0 dB in Table 9.4.X.1.1-1.

Table 9.4.X.1.1-1: Relative EIRP tolerance for local area IAB-MT type 1-O

|  |  |
| --- | --- |
| Power step ∆P (Up or down) (dB) | EIRP tolerance (dB) |
| ΔP < 2 | ± 2.5 |
| 2 ≤ ΔP < 3 | ± 3.5 |
| 3 ≤ ΔP < 4 | ± 4.5 |
| 4 ≤ ΔP < 10 | ± 5.5 |

##### 9.4.X.1.2 Aggregate EIRP tolerance for local area IAB-MT type 1-O

The aggregate EIRP control tolerance is the ability of the transmitter to maintain its EIRP in a sub-frame (1 ms) during non-contiguous transmissions within 21ms in response to 0 dB TPC commands with respect to the first UE transmission and all other power control parameters as specified in 38.213 kept constant.

The minimum requirements specified in Table 9.4.X.1.2-1 apply only when the output power is within the limits set by declared maximum output power and specified dynamic range.

Table 9.4.X.1.2-1: Aggregate power tolerance for local area IAB-MT type 1-O

|  |  |  |
| --- | --- | --- |
| TPC command | UL channel | Aggregate EIRP tolerance within 21 ms |
| 0 dB | PUCCH | ± 2.5 dB |
| 0 dB | PUSCH | ± 3.5 dB |

#### 9.4.X.2 Power control for local area IAB-MT type 2-O

##### 9.4.X.2.1 Relative EIRP tolerance for local area IAB-MT type 2-O

The relative EIRP tolerance is the ability of the transmitter to set its radiated output power in a target sub-frame (1 ms) relatively to the power of the most recently transmitted reference sub-frame (1 ms) if the transmission gap between these sub-frames is 20 ms.

The minimum requirements specified in Table 9.4.X.1.1-1 apply only when the output power is within the limits set by declared maximum output power and specified dynamic range.

2 exceptions are allowed for each of two test patterns. The test patterns are a monotonically increasing power sweep and a monotonically decreasing power sweep. For those exceptions, the power tolerance limit is a maximum of ± 11.0 dB in Table 9.4.X.1.1-1.

Table 9.4.X.2.1-1: Relative EIRP tolerance for local area IAB-MT type 2-O

|  |  |
| --- | --- |
| Power step ∆P (Up or down) (dB) | EIRP tolerance (dB) |
| ΔP < 2 | ±5.0 |
| 2 ≤ ΔP < 3 | ±6.0 |
| 3 ≤ ΔP < 4 | ±7.0 |
| 4 ≤ ΔP < 10 | ±8.0 |

##### 9.4.X.2.2 Aggregate EIRP tolerance for local area IAB-MT type 2-O

The aggregate EIRP control tolerance is the ability of the transmitter to maintain its EIRP in a sub-frame (1 ms) during non-contiguous transmissions within 21ms in response to 0 dB TPC commands with respect to the first UE transmission and all other power control parameters as specified in 38.213 kept constant.

The minimum requirements specified in Table 9.4.X.1.2-1 apply only when the output power is within the limits set by declared maximum output power and specified dynamic range.

Table 9.4.X.2.2-1: Aggregate power tolerance for local area IAB-MT type 2-O

|  |  |  |
| --- | --- | --- |
| TPC command | UL channel | Aggregate EIRP tolerance within 21 ms |
| 0 dB | PUCCH | ± 5.5 dB |
| 0 dB | PUSCH | ± 5.5 dB |

## <End of text proposal>