**3GPP TSG-SA5 Meeting #148-e *S5-233240rev2***

e-meeting, 17-25 April 2023

**Source: Huawei, Deutsche Telekom**

**Title: Conclusion for KI#3 Energy Consumption of RAN nodes**

**Document for: Approval**

**Agenda Item: 6.9.1.1**

# 1 Decision/action requested

**Include the proposed changes in TR 28.913**

# 2 References

[1] 3GPP TR 28.913: "Study on new aspects of EE for 5G networks phase 2"

# 3 Rationale

This pCR proposes to introduce a conclusion to Key Issue #3 into TR 28.913 [1].

# 4 Detailed proposal

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| **First change** |

## 4.3 Key Issue #3: Energy Consumption of RAN nodes

### 4.3.1 Description

In TS 28.554 [2] clause 6.7.3.4.2, the Energy Consumption (EC) of a gNB is defined as the sum of the Energy Consumption of all the Network Functions (NF) that constitute the gNB, with no definition of what these NFs can be. Therefore, the definition of the EC of a gNB, as specified in TS 28.554 [2] clause 6.7.3.4.2, can lead to different interpretations, especially in case of gNB split architecture.

This key issue investigates how to apply the definition of the EC of a gNB as specified in TS 28.554 [2] clause 6.7.3.4.2 to various gNB split architectures. The case of non-split gNB is already covered by the existing definition in TS 28.554 [2] clause 6.7.3.4.2.

### 4.3.2 Potential solutions

#### 4.3.2.1 Potential solution #1: Consider that ‘one logical node = one Network Function’

##### 4.3.2.1.1 Introduction

In this potential solution #1, it is proposed to consider every single ‘logical node’ (cf. TS 38.401 [8] clause 3.1) within gNBs as a Network Function (NF) and that, therefore, the EC of the gNB is the sum of the EC of all its contained logical nodes / NFs, as per TS 28.554 [2] clause 6.7.3.4.2.

##### 4.3.2.1.2 Description

In TS 38.300 [7] clause 3.2, a gNB is defined as a ‘node’ providing NR user plane and control plane protocol terminations towards the UE, and connected via the NG interface to the 5GC.

In TS 38.401 [8] clause 3.1, gNB-CU, gNB-DU, gNB-CU-CP and gNB-CU-UP are defined as ‘logical nodes’ within the gNB.

In this potential solution #1, considering every single ‘logical node’ (cf. TS 38.401 [8] clause 3.1) within split-gNBs as a Network Function (NF), the EC of a split-gNB is equal to the sum of the EC of all contained gNB-CU(s), gNB-DU(s), gNB-CU-CP(s) (if any), gNB-CU-UP(s) (if any). As any other NFs, gNB-CU(s), gNB-DU(s), gNB-CU-CP(s) and gNB-CU-UP(s) can be composed of PNFs and/or VNFs.

### 4.3.3 Conclusion and recommendation

In case of split gNBs, the potential solution #1 is not completely described in this version of the document. It is proposed to continue this work in the context of the normative phase.

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| **End of changes** |