**3GPP TSG-SA5 Meeting #158*****S5-247211d2***

Orlando, USA, 18 - 22 November 2024

**Source: China Unicom**

**Title: Add potential solution, evaluation and conclusion for EE KPI of RedCap**

**Document for: Approval**

**Agenda Item: 6.19.17**

# 1 Decision/action requested

***The group is asked to approve the proposal.***

# 2 References

[1] 3GPP TR 28.876: “Management aspects of RedCap feature”

[2] 3GPP TS 28.552: “Management and orchestration;5G performance measurements”

[3] 3GPP TS 28.554: “Management and orchestration; 5G end to end Key Performance Indicators (KPI)”

# 3 Rationale

It was approved in SP-231734 to study the management of aspects of RedCap features. One of the working taks is to investigate the method to evaluate the energy efficiency for RedCap network. In order to achieve the objective mentioned above, potential solution for EE KPI of RedCap is proposed in this contribution.

# 4 Detailed proposal

This contribution proposes to make the following changes in [1].

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| **1st Change** |

## 5.2 Use case #2: Monitoring EE KPI for RedCap

### 5.2.1 Description

RedCap is a lightweight network access solution aiming at scenarios with low-cost, low-power, low-energy-consumption and low-speed requirements, mainly applying to industrial sensors, video surveillance, wearable scenarios.

As stated in 3GPP TS 28.554 [7], clause 6.7, the network Energy Efficiency (EE) KPI is related to the performance and the energy consumption of the network providing the specific service. When network delivers communication services for RedCap UEs, there has some impacts on the evaluation of EE:

- In the aspect of performance, the key performance of RedCap service is different from the services such as eMBB, URLLC and MIoT (higher than MIoT but lower than URLLC and eMBB).

- In the aspect of energy consumption, 3GPP has introduced some complexity reduction features (such as bandwidth reduction and eDRX) for RedCap. These new features may have some impacts on the energy consumption of network which should be evaluated separately.

However, 3GPP TS 28.554 [7] only provides EE KPIs for eMBB, URLLC and MIoT. How to evaluate the EE for RedCap service should be investigated.

### 5.2.2 Potential requirements

**REQ-RedCap-Perf-EE-1:** The 3GPP management system should have capability to evaluate the energy efficiency for RedCap service.

### 5.2.3 Potential Solutions

#### 5.2.3.1 Potential solution #1

Referring to the definition of EE in TS 28.554, the RedCap EE can be calculated as the ratio between the performance of RedCap and the part of the total NFs' energy consumption used to deliver communication service for RedCap UEs.

### 5.2.4 Evaluation of potential solutions

The potential solution described in clause 5.2.3.1 provides a method to evaluate the EE for RedCap.

NOTE: The detailed solution for this use case will be for future study.

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| **2nd Change** |

## 6.X Use case #2: Monitoring EE KPI for RedCap

This use case investigates the EE KPI for RedCap. According to the EE definition in TS 28.554, this solution proposes an approach to calculate the EE for RedCap. The detailed algorithm will be for further study.

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| **End of changes** |