**3GPP TSG-SA5 Meeting #145e S5-225419rev1**

**e-meeting 15 - 24 August 2022**

**Source: China Unicom, CATT**

**Title: Add Issue on Support for URLLC Performance management on reliaility**

**Document for: Approval**

**Agenda Item: 6.8.3 Study on Management Aspects of URLLC**

# 1 Decision/action requested

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

# 2 References

[1] 3GPP TR 28.832 v0.2.0: “Management Aspects of URLLC”

[2] 3GPP TS 22.104: “Service requirements for cyber-physical control applications in vertical domains; Stage 1”

[3] 3GPP TS 22.261: “Service requirements for the 5G system; Stage 1”

[4] 3GPP TS 28.552: “Management and orchestration; 5G performance measurements”

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

# 3 Rationale

It was approved in SP-220146 to study the management aspects of URLLC and one of the objectives is to investigate performance management related to URLLC. In order to achieve the objective mentioned above, issue on performance management related to URLLC 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 Key Issues Investigation and Potential Solutions

## 5.X Issue #X: Support for URLLC Performance management on reliability

### 5.X.1 Description

#### 5.X.1.1 Relation of service KPI and network performance

As a new service deployed in 5G, URLLC is significantly different from traditional eMBB service in terms of service requirement. In TS 22.261[3] and TS 22.104[2], different service KPI requirements have been defined for URLLC with different characteristics and different application scenarios. In order to guarantee the sevice KPI of URLLC, the performance of 5G network which provides URLLC service needs to meet certain performance target for reliability and end-to-end latency accordingly.

Following is an example depicted in TS 22.104[2] to illustrate the difference between the service KPI and network performance. Communication service availability is a typical attribute of service KPI and reliability is a typical attribute of network performance. Communication service availability addresses the availability of a communication service. This definition follows the vertical standard IEC 61907. On the other hand, reliability is a 3GPP term and addresses the availability of a communication network. Network reliability can be used to evaluate whether service KPI meets the requirements.

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According to TS 22.104[2], service KPIs take effect within the scope between communication service intefaces, while network performance takes effect within the communication network which is deployed to provide the service. The study mainly focuses on the 5G network that provides URLLC service. In particular, the measurements on communication network performance need to be investigated.

#### 5.X.1.2 Support for network performance on reliability

Reliability is a typical network performance measurement used to evaluate whether the 5G network which provides URLLC services meets the corresponding service KPI requirements. As for 5G network, it is the radio network including air interface that mainly restricts the reliability and latency performance. Therefore, more attentions should be paid to the reliability and latency performance measurement for radio network from the perspective management. However, the reliability performance measurements for radio network is missing.

The definition of reliability is specified in TS 22.261[3]:

* **reliability**: in the context of network layer packet transmissions, percentage value of the packets successfully delivered to a given system entity within the time constraint required by the targeted service out of all the packets transmitted.

According to the above definition, when trying to calculate the reliability of a network, time constraint (threshold of latency) needs to be considered. Neither PER defined in TS 28.552[4] nor reliability KPIs defined in TS 28.554[5] match the definition of URLLC reliability.

URLLC performance management on reliability and latency should be supported by 5G management system and the measurement method should be studied.

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| **End of changes** |