**3GPP TSG-SA5 Meeting #145e S5-225463rev1**

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

**Source: China Unicom**

**Title: Add solution for support for performance measurements related on URLLC resource load**

**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 38.213 “NR; Physical layer procedures for control”

# 3 Rationale

It was approved in SP-220146 to study the management aspects of URLLC and one of the objectives is to investigate performance measurements related to URLLC. In order to achieve the objective mentioned above, some performance measurements 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** |

# 3 Definitions of terms, symbols and abbreviations

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

<PI > < Preemption Indication >

<CI > < Cancellation Indication >

<PB > < Power Boosting >

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| **2nd Change** |

# 5 Key Issues Investigation and Potential Solutions

## 5.X Issue #X: Support for performance measurements related on URLLC resource load

5.X.2 Potential solutions

#### 5.x.2.1 DL URLLC resource load measurements

Referring to TS 38.213, for resource multiplexing and preemption under multi-service coexistence scenarios, the downlink service scenario defines the PI (Preemption Indication) feature. And PI can be used to indicate to other UEs that their resources are preempted.

The requirements for performance management of radio network providing URLLC services is:

* The OAM should have the capability of performing measurement on DL (DownLink) resource load of URLLC services under eMBB and URLLC multiplexing scenarios.

Based on the requirement, a measurement on DL resource load of URLLC services can be defined as follows:

* **Measurement name:** DL PI Time Domain Proportion
* **Statistical method:** This measurement provides the proportion of time domain resources that use the PI (Preemption Indication) feature in the statistical period. Taking a fixed time duration as one sampling occasion, the numerator of this measurement is the number of sampling occasions that use the PI feature (when the number of preempted PRBs is greater than 0), and the denominator is the number of sampling occasions with DL data scheduled (eMBB, URLLC).

#### 5.X.2.2 UL URLLC resource load measurements

Referring to TS 38.213, for resource multiplexing and preemption under multi-service coexistence scenarios, the uplink service scenario defines CI (Cancellation Indication) and PB (Power Boosting) features. For CI, it can instruct other UE services to cancel their transmissions, which can realize resource preemption for different services in the uplink transmissions. For PB, by increasing the uplink transmission power of the UE, it can resist the interference caused by the transmission of other UEs.

The requirements for performance management of radio network providing URLLC services is:

* The OAM should have the capability of performing measurement on UL (UpLink) resource load of URLLC services under eMBB and URLLC multiplexing scenarios.

Based on the requirement, measurements on UL resource load of URLLC services can be defined as follows:

* **Measurement name:** UL CI Time Domain Proportion
* **Statistical method:** This measurement provides the proportion of time domain resources that use the CI (Cancellation Indication) feature in the statistical period. Taking a fixed time duration as one sampling occasion, the numerator of this measurement is the number of sampling occasions that use the CI feature (when the number of cancelled PRBs is greater than 0), and the denominator is the number of sampling occasions with UL data scheduled (eMBB, URLLC).
* **Measurement name:** UL PB Time Domain Proportion
* **Statistical method:** This measurement provides the proportion of time domain resources that use the PB (Power Boosting) feature in the statistical period. Taking a fixed time duration as one sampling occasion, the numerator of this measurement is the number of sampling occasions that use the PB feature (when the number of power boosted PRBs is greater than 0), and the denominator is the number of sampling occasions with UL data scheduled (eMBB, URLLC).

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| **End of changes** |