**3GPP TSG-SA5 Meeting #144e S5-224135rev2**

**e-meeting 27 June - 1 July 2022**

**Source: China Unicom**

**Title: Add solution for URLLC performance measurements related to DL 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”

# 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].

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| <PI > < Preemption Indication >**2nd Change** |

# 5 Key Issues Investigation and Potential Solutions

## 5.X Key Issue #X: Performance measurements related to URLLC

### 5.X.1 Description

5.X.2 Potential solutionsIn order to measure resource multiplexing and preemption under multi-service coexistence scenarios to reflect resource load and resource allocation rationality, new measurements and KPIs should be added to effectively evaluate resource load of URLLC services under eMBB and URLLC multiplexing scenarios. 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. Accordingly, the following measurement is proposed.

5.X.2.1 DL PI Time Domain Proportion

a) This measurement provides the proportion of time domain resources that invoke the preemption indication (PI) 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 invoke 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, etc.).

b) SI

c) This measurement is obtained as:,

where

 denotes the proportion of time domain resources that invoke the PI feature during the time period, with value range: 0-100%;

 is the number of sampling occasions that invoke the PI feature during the time period , ;

 is the invoking PI feature result of sampling occasion , when the number of physical resource blocks (PRBs) that invoke the PI feature at sampling occasion is greater than 0, = 1, and when the number of PRBs that invoke the PI feature at sampling occasion is equal to 0, = 0;

 is the number of sampling occasions with DL data scheduled during the time period ,；

 is the DL data scheduled result of sampling occasion , when there is DL data scheduled at sampling occasion , =1, and when there is no DL data scheduled at sampling occasion , =0;

NOTE: DL data scheduled is scheduled data of user plane, such as eMBB data, URLLC data, etc.

 denotes the time period during which measurement is performed;

 denotes sampling occasion (e.g. 1 slot) during time period .

d) A single integer value from 0 to 100.

e) RRU.PiDtDl, which indicates the proportion of time domain resources that invoke the PI feature

f) NRCellDU

g) Valid for packet switched traffic

h) 5GS

i) One usage of this measurement is for evaluating the resource load of URLLC services under eMBB and URLLC multiplexing scenarios.

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| **End of changes** |