**3GPP TSG-SA WG4 Meeting post 130 S4-242025**

**Orlando, 4**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **26.942** | **pCR** |  | **rev** | **-** | **Current version:** | **0.3.2** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network | **x** |

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| ***Title:***  | Modification to description to Key Issue #2: Monitoring and measurement |
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| ***Source to WG:*** | Nokia |
| ***Source to TSG:*** | S4 |
|  |  |
| ***Work item code:*** | FS\_MediaEnergyGREEN |  | ***Date:*** | 2024-11-06 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-19 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | The latest draft of 3GPP TR 26.942 contains Key Issue #2: Monitoring and measurement under clause 6.2. Some modifications are proposed to the content of the description |
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| ***Summary of change:*** | This CR proposes new text to be added in TR 26.942 on “Clause 6.2 Key Issue #2: Monitoring and measurement”. |
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| ***Consequences if not approved:*** | Proposed objectives will not be met. |
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| ***Clauses affected:*** | 6.2, 6.2.1 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| 1st Change |

## 6.2 Key Issue #2: Energy-related monitoring and measurement

### 6.2.1 Description

The measurement of energy consumption by media services is an essential pre-requisite to facilitate efficient energy use and energy saving. The environmental impact of the consumption of media services depends various system actors: equipment manufacturers, networks, data centre operators, service providers, but also users through their usage behaviour.

Requirements of monitoring and measurement relating to energy consumption and efficiency have already been defined by 3GPP in TR 22.882 [22882] but those requirements are only related to energy consumption monitoring of the 5G network or the 5G system. TR 23.700-66 [23700-66] studies and identifies potential enhancements to the 5G System (e.g. including network energy related information exposure, and enhancement of subscription and policy control to enable energy efficiency as a service criterion) with the dual aims of (i) improving energy efficiency and (ii) supporting energy saving in the network, taking the EnergyServ requirements in TS 22.261 [22261] into consideration.

The purpose of this Key Issue is to extend the above work, by studying and identifying potential enhancements to energy-related monitoring and measurement aspects () in the context of the following media delivery architectures, applications and services:

- The 5G Media Streaming System according to TS 26.501 [26501],

- 5G Multicast–Broadcast User Services according to TS 26.502 [26502],

- Real-time Media Communication according to TS 26.506 [26506],

- Split rendering Media session Enabler according to TS 26.565 [26565], etc.

The most efficient way to address energy saving in this context is to consider the complete end-to-end media delivery chain, seeking to understand how decisions made on one end of the chain impact power consumption on other ends of the workflow. As explained in clause 4.2.2, UE data collection has been defined to monitor QoE in the 5G system. But energy-related information is missing.

NOTE 1: It is presumed that the user has granted consent for its UE data to be collected, reported and subsequently exposed by means outside the scope of the study or following normative work.

NOTE 2: The collection, reporting and exposure of location-based UE data is expected to comply with regional regulatory requirements and may be further limited by MNO policy.

In this context, the subsequent analysis by this Key Issue will consider the following questions:

1. Which UE energy-related information will be collected to measure, correlate, and optimize energy usage across the entire streaming distribution chain?

2. Can existing methods be leveraged to measure/monitor the identified UE energy-related information?

3. Which UE entity is appropriate to measure this UE energy-related information?

This issue is even more important for advanced media services such as XR services, Split Rendered media services, etc. which are expected to incur substantial energy consumption both at the device and network levels, presenting significant challenges for operators and service providers.

For instance, when a Mobile Network Operator (MNO) deploys a communication service to fulfil application service requirements, such as those of a gaming application, it is crucial for the customer – whether an Application Service Provider (ASP) or an industry vertical – to ensure that the application service reduces energy consumption for both end users and the data network. Failure to do so could necessitate short-notice application layer adaptations within the Application Service Provider's domain. This may result in adjustments being made to service levels in response to anticipated high energy consumption in specific service areas or during peak hours that adversely affect the Quality of Experience for service users.

In a practical scenario, an ASP intends to deploy a gaming service within a designated service area, served by an MNO's 5G network. Various service levels may exist, each associated with specific Key Performance Indicators (KPIs), such as automation levels or video quality targets. To ensure energy efficiency the ASP monitors the energy efficiency of its application service across specified service levels. Monitoring of application energy consumption may occur periodically or may be event-triggered, depending on the ASP's requirements, which are typically outlined in the Service Level Agreement (SLA). The MNO and ASP may agree on a certain energy efficiency target for the application service and optionally for given service levels.

This analysis will need to take into consideration existing work done in 3GPP but also other market trends. Application Service Providers are often reluctant to deploy solutions specific to mobile networks. Proposing technologies already supported in their services or technologies that are agnostic to the network, or which operate passively without the active involvement or knowledge of applications, are more likely adopted.

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| End of change |