**3GPP TSG-SA5 Meeting #140-e *S5-216049rev4***

e-meeting, 15 - 24 November 2021 *Revision of S5-21xxxx)*

**Source: Orange**

**Title: New WID on enhancements of EE for 5G phase 2**

**Document for: Approval**

**Agenda Item: 6.2**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: Enhancements of EE for 5G Phase 2

Acronym: EE5GPLUS\_Ph2

Unique identifier:

{A number to be provided by MCC at the plenary}

Potential target Release: Rel-18

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  |  | X | X |  |
| No | X | X |  |  |  |
| Don't know |  |  |  |  |  |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
| X | Feature |
|  | Building Block |
|  | *Work Task* |
|  | Study Item |

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| FS\_EE5G\_Ph2 | SA5 |  | Study on new aspects of EE for 5G networks Phase 2 |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 870022 | Enhancements on EE for 5G networks | This work item is the continuation of Rel-17 work item ‘Enhancements on EE for 5G networks’.  |

# 3 Justification

The Release 17 work item on enhancements on energy efficiency of 5G networks led to the specification of use cases, requirements and solutions for the measurement of the energy efficiency of NG-RAN, 5GC and network slice and for the optimization of the energy efficiency, i.e. the management of the saving of the energy, in 5G.

Existing 3GPP specifications dealing with the energy efficiency of 5G have some limitations which are proposed to be addressed by the study item mentioned in clause 2.2. Each time a use case and/or solution proposed in the study item mentioned in clause 2.2 is deemed acceptable, it will be moved to this work item. This may include: defining EE KPIs for new network slice types, defining new EE KPIs for any network slice types, Energy Consumption (EC) KPI for containerized network functions, describing new use cases, requirements and procedure flows for energy saving, etc.

This work item will be fed by the companion Rel-18 ‘Study on new aspects of EE for 5G networks Phase 2’.

Besides, other 3GPP working groups identify use cases and solutions for energy saving, which may require the support from OA&M. The present work item should ensure the coordination and provide support.

# 4 Objective

The objective is to:

* address the cross-WGs/SDOs issues related to energy efficiency / energy saving, for the purpose of coordination;
* address any remaining solutions from pending Rel-17 items;
* consider conclusions from the companion Rel-18 Study on new aspects of EE for 5G networks Phase 2 mentioned in clause 2.3;
* define new KPIs, including for Energy Consumption (EC) and Energy Efficiency (EE), and means to calculate them:
	+ EE KPI(s) for new types of network slice such as e.g. V2X and new KPIs for any network slice types,
	+ VM-based NF EC KPI enhanced definition(s) based on:
		- more accurate virtual CPU usage metrics if they can be provided by ETSI NFV MANO,
		- more virtual resource usage metrics such as e.g. virtual disk usage, virtual link usage, also provided by ETSI NFV MANO,
	+ Containerized NF EC KPI definition(s) based on latest achievements from ETSI NFV,
	+ Resource Efficiency KPI of 5GC network functions;
* specify new use cases, requirements and solutions for energy saving, applying to NG-RAN and/or 5GC and/or network slicing, including AI/ML assisted energy saving. This work item will focus on end-to-end energy saving use case(s) description and potential solution(s),
* provide OA&M solutions, if needed, to energy saving use cases and requirements expressed by other 3GPP working groups.

For the aforementioned items, exchanges with other 3GPP WGs, ETSI TC EE, ITU-T SG5, GSMA and NGMN may be needed, e.g. via LSs.

# 5 Expected Output and Time scale

|  |
| --- |
| New specifications {One line per specification. Create/delete lines as needed} |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|  |
| --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 28.310 | New use cases and requirements. | SA#100 (June 2023) |  |
| 28.552 | New performance measurements | SA#100 (June 2023) |  |
| 28.554 | New KPI(s) | SA#100 (June 2023) |  |
| 28.541 | New IOCs and/or attribute, if needed | SA#100 (June 2023) |  |

# 6 Work item Rapporteur(s)

Cornily Jean-Michel, Orange, jeanmichel.cornily@orange.com

# 7 Work item leadership

SA5

# 8 Aspects that involve other WGs

{This information is provided as best effort assumption, at the time of submission of the WID to TSG approval. It can be later changed without a need to revise the WID.

The “aspects” can be provided by topic (e.g. “security”, “multimedia”) and/or by specifying the WG(s) e.g.: "SA2, SA3, SA5, SA6. CT6 for storage, and potentially SA4". If not applicable, indicate "None" or "None identified yet"}

# 9 Supporting Individual Members

{At least 4 supporting Individual Members are needed. There is an expectation that these companies will provide resources to progress the work. Note that having 4 supporting companies is a necessary but not sufficient condition: the usual TSG approval process by consensus is needed for the WID approval}

|  |
| --- |
| Supporting IM name |
| Orange |
| AT&T |
| Telefonica |
| Deutsche Telekom |
| China Unicom |
| Verizon |
|  |
| Huawei |
| Intel |
| Samsung |
| Ericsson |