**3GPP SA WG2 Meeting #S2-161 S2-2403449**

**26 Feb. – 01 March, 2024 Athens, Greece rev of S2-2403163**

Title: draft LS on per UE energy consumption in RAN

Response to:

Release: Rel-19

Work Item: FS\_EnergySys

Source: Vodafone [SA2]

To: RAN, RAN1, RAN2, RAN3, RAN4

Cc: SA, SA1, SA5,

**Contact Person:**

Name: Chris Pudney

E-mail Address: chris dot pudney at vodafone dot com

**Send any reply LS to: 3GPP Liaisons Coordinator,** [**mailto:3GPPLiaison@etsi.org**](mailto:3GPPLiaison@etsi.org)

Attachments:

1. **Overall Description:**

Based on Rel-19 stage 1 requirements in TS 22.261 clause 6.15a, SA2 are studying on Energy Efficiency and Energy Saving (TR 23.700-66) including how to expose information about the amount of network energy consumed by UEs.

In general, operators can already (pre-Rel-19) generate an approximate “energy consumption per UE” by taking the complete energy consumption for the network over a period of time; the complete data traffic for the network over that period of time; and the amount of data used by the UE over that period of time.

However, it is clear this is only a very rough piece of information. SA2 are interested whether the RAN can estimate and report the network energy consumption for UE in connected mode. While some of this energy consumption may be compute based on the UE’s data volume, others is likely to vary with the radio conditions and require more complex estimation. .

With regard to the granularity of reporting, SA2 kindly invites RAN working groups to indicate whether per-UE-per-network slice, and per-UE-per-QoS flow reporting is possible for the network energy consumption including the energy consumption that varies with radio conditions.

With regard to how the information about the UE’s RAN energy consumption is reported to the CN, SA2 are studying various mechanisms (via N2 and N3 interfaces e.g., “secondary RAT data volume reporting”, or GTP-U header extensions, etc).

**2. Actions:**

**To RAN**

SA2 kindly invites TSG-RAN to take these requests into account e.g., with regard to work organisation and planning, and co-ordinate with TSG-SA if necessary.

**To RAN1, RAN2, RAN4**

SA2 kindly invites RAN1, RAN2 and RAN4 to investigate whether it is possible and how the gNB can estimate a more accurate the base station energy consumption described above.

**3. Date of Next SA2 Meetings:**

SA2#162 April 15 – 19, 2024 Changsha, CN

SA2#163 May 27 – 31, 2024 Jeju Island, KR