**SA WG2 Meeting #143e S2-210xxxx**

**Feb 24th – March 9th, 2021 ; Elbonia (revision of S2-210xxxx)**

Title: (DRAFT) Reply LS on NR satellite access PLMN selection

Response to: C1-210438 / S2-210xxxx

Release: Rel-17

Work Item: 5GSAT\_ARCH

Source: SA2

To: CT1

Cc: SA1

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Attachments: TS 23.502 CR xxxx

**1. Overall Description:**

SA2 thanks CT1 for their LS on 5GSAT\_ARCH PLMN selection requirements.

Even in terrestrial networks the UE is expected to select a PLMN in the same country as the UE's present location. In this case, the country borders are reflected by the coverage area with reasonable accuracy. NR satellite access cell can ultimately cover multiple countries. Since the coverage area does not control the UE mandate to select among available PLMNs of the same country, we need to allow enforcement of this principle both in the UE, if the UE is aware of its location, and in the CN, if the UE is not aware of it.

The Recommended MCC List is only needed in the latter case when the CN detects that the UE is attempting to access PLMN in a different country. This provides the means for the CN to inform the UE of location in the present country when the UE is not aware of it.

SA2 would like to answer the questions from CT1 as follows:

Q1: *Is it possible to limit the UE's PLMN selection to consider PLMN candidates belonging to one country?*

The main intention is that an AMF that detects the UE attempting to access PLMN of a different country can reject the illegal access attempt and include guidance in the Recommended MCC List on which country's PLMNs the UE should try to select instead. No new PLMN priority is necessary as it is intended that the UE applies the Preferred MCC the same way as it applies the RPLMN MCC for background scanning in VPLMN, i.e. the usual PLMN selection priorities apply, but only PLMN candidates in the identified MCC are considered in the selection.

Q2: *Is there suitable cause value to indicate to UE in DE-REGISTRATION REQUEST and REGISTRATION REJECT messages that the UE needs to select a PLMN in different country?*

SA2 has identified the need to both reject the selected PLMN in the present UE location and to offer Recommended MCC as a hint to the UE to select among candidate PLMNs in the present country, based on the UE location.

The reject message should not affect the UE's ability to select the same PLMN later at a location where it is allowed. This procedure is only executed when the network discovers that the UE is attempting to access a PLMN in a different country, indicating that the UE is not aware of the country at all.

CN reject with Recommended MCC List is only needed when the UE attempts to access a PLMN that is NOT in the PLMN or the UE's current geo-location. UE based selection using the UE awareness of its location is of course more preferred, but this network enforcement is needed to prevent fraud and to provide regulatory services in the country of the UE location. The AMF sends the Recommended MCC List to the UE only if the UE attempted to access a PLMN that is in a different country. Consequently, the UE is expected to select among candidate PLMNs in the country indicated in the Recommended MCC List. It is the AMF responsibility to issue Recommended MCC List that refers to the country of the present UE location.

Q3: *Can the AMF indicate the target MCC List (e.g. based on UE location) in DE-REGISTRATION REQUEST and REGISTRATION REJECT message, to be used as input to PLMN selection?*

The UE is expected to use the Recommended MCC List as explained in Q1, by applying the existing PLMN selection priorities specified in TS 23.122, but with the exception of limiting its selection to RPLMN country, the UE should limit its PLMN selection to PLMN candidates in the country indicated in Recommended MCC List.

The AMF should only indicate Recommended MCC List to the UE when it knows the UE location country with reasonable accuracy. At the minimum, the Recommended MCC list should contain the MCCs that are used in the UE location country.

SA2 seeks CT1 guidance as PLMN selection stage 2 owners on whether any possible additional MCCs, such as 901 satellite MCC or other multi-national MCCs could be added in Recommended MCC list by the AMF or by the UE or whether even both would have the option to indicate such additional allowed MCCs?

Answers to CT1 follow-up questions:

i) The new cause value indicates that the selected PLMN is not allowed in the present UE location. It does not affect the selection of the same UE in another country.

ii) The MCC list is intended to restrict the UE's PLMN selection the same way as the RPLMN MCC restricts the UE in VPLMN to select among candidate PLMNs of the same country as the VPLMN in TS 23.122 clause 4.4.3.3, i.e. full PLMN prioritisation is applied as specified, but only among PLMN candidates of the Recommended MCCs.

**2. Actions:**

**To ETSI TC LI and SA5 groups.**

**ACTION:** SA2 kindly asks CT1 to take this information into account and keep SA2 informed of their progress.

**3. Date of Next TSG-SA WG2 Meetings:**

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|  | DATES (2021) | LOCATION | CTRY |
| SA2#144e | April 12th – 16th  | E-meeting | any |
| SA2#145e | May17th – 28th  | E-meeting | any |