**3GPP TSG-SA1 Meeting #108 *S1-244424***

**Orlando, United States, 18th Nov 2024 - 22nd Nov 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  | **22.268** | **CR** | **0084** | **rev** | **01** | **Current version:** | **18.3.0** |  |
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| *For* [***HELP***](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 | **X** | Core Network | **X** |

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| ***Title:***  | Warning notification with geofencing for ETWS over satellite access  |
|  |  |
| ***Source to WG:*** | Qualcomm, Novamint, SyncTechno Inc.,  |
| ***Source to TSG:*** | S1 |
|  |  |
| ***Work item code:*** | TEI19 |  | ***Date:*** | 2024-11-08 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | Unlike other PWS systems, current requirements for ETWS do no include warning notification with geofencing. As discussed by RAN2 ETWS geofencing would be beneficial especially for NTN cells.  |
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| ***Summary of change:*** | Geofencing requirements for ETWS are added, applicable to Satellite access, |
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| ***Consequences if not approved:*** | Missing requirements for ETWS. |
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| ***Clauses affected:*** | 5.6 (new) |
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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:*** | S1-244402 |

=============== First Change =============

5 Earthquake and Tsunami Warning System

5.1 Background

Warning Notifications are expected to be delivered to the users while satisfying the following requirements:

- Quick Warning Notification delivery after the occurrence of Earthquake or Tsunami.

 Earthquake and Tsunami propagate very fast. The duration time between the actual occurrence of the disaster and its arrival is very short. The order of the duration time is around seconds or minutes at most. Therefore the Warning Notifications shall be delivered quickly to the users in the emergency impacted area so that they could take any actions to escape from danger.

- Accurate Warning Notification delivery.

 Warning Notification delivery urges the users to take the actions such as evacuation. Therefore, the Warning Notification shall be delivered to the users accurately in the Notification Area and the content of Warning Notification should be understandable for many types of users (i.e. impaired persons, foreigners).

5.2 Duration of delivery time

Duration of the delivery time for PLMN operators is the time from the receipt of the Warning Notification by the PLMN operator, i.e. the edge of the 3GPP network, to the time that the Warning Notification is successfully delivered to the UEs.

Provisioning of delivery of Primary and Secondary Notification may be required:

- Primary Notification shall be delivered within 4 seconds to the UE in the Notification Area even under congestion situation.

- Secondary Notification is delivered to the users in the Notification Area even under congestion situation.

Note 1: UEs that are out of coverage or switched off are not considered in the requirements.

Note 2: Secondary Notification may not always be generated as it depends on the Warning Notification Provider’s policy.

Note 3: Primary Notification may not always be generated (i.e. the warning may start with a Secondary Notification).

5.3 Information element and volume

The following are the requirements from the perspective of information element and amount of data.

Both Primary and Secondary Notification shall:

- support at least 2 types of emergency events, which are Earthquake and Tsunami;

- be able to indicate the preferred UE behaviours when receiving Warning Notification, (e.g. whether to display text in the foreground, whether to ring a buzzer, whether to vibrate);

- be distinguishable from notifications generated for the purpose of testing, training and other notification services;

- be sent in an optimized type and amount of data, for example, a text with a certain length, by considering the delivery platforms for ETWS.

Primary Notification shall:

- convey data which is small enough to be sent quickly on the network.

- convey small amount of data to indicate the imminent occurrence of Earthquake and Tsunami, etc.

Secondary Notification may:

- convey a large amount of data in order to deliver text, audio to instruct what to do / where to get help, graphical data such as a map indicating the route from present position to evacuation site, time table of food distribution.

Note: The amount of data to be sent within a Primary Notification would be a few bytes to achieve quick information delivery.

5.4 Priority

Requirements from the perspective of priority are as follows:

- Primary Notification has higher priority than Secondary Notification.

- Notifications shall be able to be sequenced by the PLMN according to priority of notification in case that Primary Notification and Secondary Notification should exist at the same time in PLMN.

5.5 Roaming users

Upon receiving Primary Notification which includes small amount of data to indicate the imminent occurrence of an Earthquake and/or Tsunami, the UE shall display the Warning Notification in a way that is easy to understand by the user, such as an icon or picture.

Note: It is expected that that the Warning Notification Provider will send the Warning Notification in the languages in common use in the specific area or in such a way that the Warning Notification can reasonably be understood.

5.6 Additional PWS Requirements Specific to ETWS

1st option;

Subject to local/regional regulatory requirements, in addition to ETWS Primary and Secondary Notifications, ETWS shall be able to support broadcasting Warning Notification Area(s). This requirement applies only to LTE and NR satellite accesses.

Subject to local/regional regulatory requirements, an ETWS-capable UE shall utilize UE-Based Location Calculation (see 3GPP TS 22.071 [11]) to determine whether it is located within the corresponding Warning Notification Area(s).

Subject to local/regional regulatory requirements, an ETWS-capable UE shall present the received ETWS Notification(s) (Primary or Secondary) if there is a corresponding Warning Notification Area(s) and if the ETWS-capable UE is able to determine that its location is within the corresponding Warning Notification Area(s). Otherwise, if an ETWS-capable UE is unable to or fails to determine its location, the ETWS-capable UE shall present the ETWS Notification(s) (Primary or Secondary) to the user.

2nd option;

In addition to ETWS Primary and Secondary Notifications, ETWS shall be able to support broadcasting Warning Notification Area(s). This requirement applies only to LTE and NR satellite accesses.

An ETWS-capable UE which has capability to connect to satellite access shall utilize UE-Based Location Calculation (see 3GPP TS 22.071 [11]) to determine whether it is located within the corresponding Warning Notification Area(s).

An ETWS-capable UE which has capability to connect to satellite access shall present the received ETWS Notification(s) (Primary or Secondary) if there is a corresponding Warning Notification Area(s) and if the ETWS-capable UE is able to determine that its location is within the corresponding Warning Notification Area(s). Otherwise, if an ETWS-capable UE is unable to or fails to determine its location, the ETWS-capable UE which has capability to connect to satellite access shall present the ETWS Notification(s) (Primary or Secondary) to the user.