**3GPP TSG-CT WG1 Meeting #131-eC1-21xxxx**

**E-meeting, 19-27 August 2021 (was C1-214406)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.041** | **CR** | **0225** | **rev** | **1** | **Current version:** | **17.1.0** |  |
|  | | | | | | | | |
| *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:*** | Adding support for PWS in SNPNs | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated, one2many, THALES, KPN, Nokia, Nokia Shanghai Bell, vivo Mobile Communications Co. LTD, SyncTechno Inc, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNPN | | | | |  | ***Date:*** | | | 2021-08-19 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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 can be 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 1. At SA#92-e, SA approved an SA1 WID on NPN support of PWS in SP-210585 and corresponding CR 0532 to TS 22.261 (SP-210586) containg the following requirement:   *Subject to regional or national regulatory requirements for PWS (see TS 22.268 [31]), the 5G system shall be able to support PWS for non-public networks.*  Consequently, support for PWS in SNPNs needs to be added to TS 23.041.   1. In PLMNs, USIM file EFPWS is used to configure the UE on whether to ignore all warning messages received in its HPLMN or in a PLMN equivalent to it, and on whether to ignore all warning messages received in a VPLMN or in a PLMN equivalent to it. For SNPNs, a similar configuration is needed but since UEs in SNPN access operation mode does not necessarily have a USIM, the configuration needs to be stored in the ME and thus new configuration parameters in the “list of subscriber data” are needed. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Support for PWS in SNPNs is added to TS 23.041 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The stage 1 requirement approved by SA will not be supported in CT specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 1.1, 1.2, 1.3, 2, 8.1, 8.2, 9.1.3.1, 9.1.3.5.2, 9.4.1.2.1, 9.4.1.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\* First change \*\*\*

## 1.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] Void

[2] 3GPP TS 22.003: "Circuit Teleservices supported by a Public Land Mobile Network (PLMN)".

[3] 3GPP TS 23.038: "Alphabets and language‑specific information".

[4] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".

[5] Void.

[6] 3GPP TR 03.49 Version 7.0.0: "Digital cellular telecommunication system (Phase 2+); Example protocol stacks for interconnecting Cell Broadcast Centre (CBC) and Base Station Controler (BSC)".

[7] 3GPP TS 44.012: "Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface".

[8] 3GPP TS 45.002: "Multiplexing and multiple access on the radio path".

[9] Void.

[10] 3GPP TS 48.052: "Base Station Controller ‑ Base Transceiver Station (BSC - BTS) interface; Interface principles".

[11] 3GPP TS 48.058: "Base Station Controller ‑ Base Transceiver Station (BSC - BTS) interface; Layer 3 specification".

[12] ITU-T Recommendation X.210: "Information technology - Open systems interconnection - Basic Reference Model: Conventions for the definition of OSI services".

[13] 3GPP TS 48.008: "Mobile-services Switching Centre - Base Station System (MSC-BSS) interface; Layer 3 specification".

[14] 3GPP TS 23.042: "Compression algorithm for text messaging services".

[15] 3GPP TS 23.048: "Security Mechanisms for the SIM application toolkit".

[16] 3GPP TS 25.331: "Radio Resource Control (RRC); Protocol specification".

[17] 3GPP TS 25.401: "UTRAN Overall Description".

[18] 3GPP TS 31.102: "Characteristics of the USIM Application".

[19] 3GPP TS 25.324: "Broadcast/Multicast Control BMC".

[20] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[21] 3GPP TR 25.925: "Radio Interface for Broadcast/Multicast Services".

[22] Void.

[23] Void.

[24] Void.

[25] GSMA AD.26: "Coding of Cell Broadcast Functions".

[26] 3GPP TS 44.018: "Mobile radio interface layer 3 specification; Radio Resource Control Protocol".

[27] 3GPP TS 44.060: "General Packet Radio Service (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control / Medium Access Control (RLC/MAC) protocol".

[28] 3GPP TS 22.268: "Public Warning System (PWS) Requirements".

[29] 3GPP TS 25.419: "UTRAN Iu-BC Interface: Service Area Broadcast Protocol (SABP)".

[30] 3GPP TS 48.049: "Base Station Controller - Cell Broadcast Centre (BSC-CBC) Interface Specification; Cell Broadcast Service Protocol (CBSP)".

[31] Void.

[32] ETSI TS 102 900: "European Public Warning System (EU-ALERT) using the Cell Broadcast Service".

[33] IETF RFC 4960: "Stream Control Transmission Protocol".

[34] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".

[35] 3GPP TS 29.168: "Cell Broadcast Centre interfaces with the Evolved Packet Core".

[36] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".

[37] Void.

[38] 3GPP TS 23.007: "Restoration Procedures".

[39] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[40] 3GPP TS 38.413: "NG Radio Access Network (NG-RAN); NG Application Protocol (NGAP)".

[41] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[42] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[43] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[44] 3GPP TS 38.300: "NR; NR and NG-RAN Overall Description; Stage 2".

[45] 3GPP TS 23.527: "5G System; Restoration Procedures; Stage 2".

[46] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRAN); Overall description; Stage 2".

[47] ATIS-0700041: "WEA 3.0: Device-Based Geo-Fencing".

[48] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".

[xx] 3GPP TS 23.122: "Non-Access-Stratum functions related to Mobile Station (MS) in idle mode".

## 1.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [20] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [20].

5GS 5G System

5GCN 5G Core Network

EPC Evolved Packet Core

ePWS enhancements of Public Warning System

NR New Radio

SNPN Stand-alone Non-Public Network

WEA Wireless Emergency Alert

## 1.3 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.501 [39] apply:

**5G System**

**NG-RAN**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 38.300 [44] apply:

**gNB**

**NG-RAN node**

**ng-eNB**

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.122 [39] apply:

**Subscribed SNPN**

# 2 General description

The CBS service is analogous to the Teletex service offered on television, in that like Teletex, it permits a number of unacknowledged general CBS messages to be broadcast to all receivers within a particular region. CBS messages are broadcast to defined geographical areas known as cell broadcast areas. These areas may comprise of one or more cells, or may comprise the entire PLMN or SNPN. Individual CBS messages will be assigned their own geographical coverage areas by mutual agreement between the information provider and the PLMN or SNPN operator. CBS messages may originate from a number of Cell Broadcast Entities (CBEs), which are connected to the Cell Broadcast Centre. CBS messages are then sent from the CBC to the cells, in accordance with the CBS's coverage requirements.

A CBS page comprises of 82 octets, which, using the default character set, equates to 93 characters. Other Data Coding Schemes may also be used, as described in 3GPP TS 23.038 [3]. Up to 15 of these pages may be concatenated to form a CBS messagee. Each page of such CBS message will have the same message identifier (indicating the source of the message), and the same serial number. Using this information, the MS/UE is able to identify and ignore re‑broadcasts of already received messages.

CBS messages are broadcast cyclically by the cell at a frequency and for a duration agreed with the information provider. The frequency at which CBS messages are repeatedly transmitted will be dependent on the information that they contain; for example, it is likely that dynamic information such as road traffic information, will require more frequent transmission than weather information. The repetition period will also be affected by the desire for CBS messages to be received by high speed mobiles which rapidly traverse cells.Reception of CBS messages for an MS/UE is not a requirement if it is connected in the CS domain. It should be possible for an MS/UE to receive messages if it is connected in the PS domain and no data is currently transmitted.

|  |  |  |  |
| --- | --- | --- | --- |
| CS-Domain | CS-Connected | CS-Idle | CS-Idle |
| PS-Domain | - | PS-Idle | PS-Connected |
| Reception of CBS Message | Not possible | Possible | Depends on RRC mode |

NOTE: In case the UE is in CS-Idle and PS-Connected Mode it depends on the Radio Resource Control State whether reception of CBS messages is possible. The relevant states are described in 3GPP TS 25.331 [16].

GSM only [CBS messages may be broadcast on two different cell broadcast channels, which are characterized by different QoS. A MS is always able to read the basic channel (see 3GPP TS 45.002 [8]). The reading of the extended channel may collide with other tasks of the MS. Therefore the probability of receiving a CBS message on the extended channel is smaller than on the basic channel. The reading of the extended channel for MSs is optional. The scheduling on the channels will be done independently].

To permit mobiles to selectively display only those CBS messages required by the MS/UE user, CBS messages are assigned a message class which categorises the type of information that they contain and the language (Data Coding Scheme) in which the CBS message has been compiled. Through the use of appropriate MMI, the user is then able to ignore message types that he does not wish to receive, e.g. advertising information or messages in an unfamiliar language.

A network may be able to remotely activate mobile terminals in order to enable them to receive CBS messages, according to regulatory requirements (see 3GPP TS 25.331 [16]).

PWS provides a service that allows the network to distribute warning messages on behalf of public authority. PWS enables the distribution of ETWS, CMAS (aka WEA), KPAS and EU-Alert warning messages in GSM, UMTS, E-UTRAN, and NG‑RAN.

Some of the PWS warning message distribution mechanisms are access technology specific, but some CBS procedures and related message structures are common for GSM and UMTS, and some CBS procedures and related message structures are common for E-UTRAN and NG‑RAN.

The language-independent content mapped to an event or a disaster can be included in a warning message that is transparently passed from CBC to UEs. UEs with user interface which support the ePWS language-independent content functionality can display the entire warning message that they receive.

UEs with no user interface which support the ePWS disaster characteristics functionality can derive the characteristics of a disaster from the message identifier of a received warning message.

\*\*\* Next change \*\*\*

## 8.1 General MS/UE Functionality

Only GSM [The MS is responsible for recombination of the blocks received via the radio path to reconstitute the CBS message.]

The precise method of display of CBS messages is outside the scope of 3GPP specifications, however it is assumed that an MS/UE will:

|  |  |  |
| --- | --- | --- |
| MS | | UE |
| Discard sequences transferred via the radio path (see 3GPP TS 44.012 [7]) which do not consist of consecutive blocks. | | Discard corrupt CBS messages received on the radio interface. |
| Have the ability to discard CBS information which is not in a suitable data coding scheme. | | |
| Have the ability to discard a CBS message which has a message identifier indicating that it is of subject matter which is not of interest to the MS/UE. | | |
| Have the ability to detect duplicate messages as specified in clause 8.2; | | |
| Have the ability to transfer a CBS message to an external device, when supported ; | | |
| Optionally enter CBS DRX mode based upon received Schedule Messages (see 3GPP TS 44.012 [7]); | Enter CBS DRX mode based upon received Schedule Messages (see 3GPP TS 25.324 [19]). | |
| Optionally skip reception of the remaining block(s) of a CBS message which do(es) not contain cell broadcast information (see 3GPP TS 44.012 [7]); | Not applicable. | |
| Optionally read the extended channel. | Not applicable for UMTS, E-UTRAN, and NG-RAN. | |
| Enable the user to activate/deactivate CBS through MMI | | |
| Enable the user to maintain a "search list" and receive CBS messages with a Message Identifier in the list while discarding CBS messages with a Message Identifier not in the list. | | |
| Discard CBS messages in Message Identifier value range "A000hex-AFFFhex" unless received from HPLMN, EHPLMN, PLMN that is equivalent to HPLMN or EHPLMN, or a subscribed SNPN. | | |
| Allow the user to enter the Message Identifier via MMI only for the 1 000 lowest codes. | | |
| Be capable of receiving CBS messages consisting of up to 15 pages. | Be capable of receiving CBS messages consisting of up to 1230 octets in UTRAN or warning messages of up to 9600 octets in E-UTRAN, or NG-RAN. | |
| When emergency indication is included in the received paging and/or CBS/warning message, behave as specified in 3GPP TS 22.268 [28].  If the emergency indication includes the value for "test", mobile terminals which are not used for testing purpose silently discard the paging message and do not receive the corresponding CBS/warning message. | | |

## 8.2 Duplication Detection Function

The MS/UE uses a common duplication detection function for all messages received in GSM, UMTS, E-UTRAN and NG-RAN.

In a PLMN, upon reception of a new message, the MS/UE shall perform duplication detection on the messages. Those messages that are received from the same PLMN in the certain time period specified by the duplication detection time are subject to duplication detection. The MS/UE shall not perform duplication detection on messages whose duplication detection time has elapsed. The value of the duplication detection time to be used by the MS/UE shall be derived from the MCC of the current PLMN as follows:

- If MCC = 440 or MCC = 441 (Japan), duplication detection time shall be 1 hour;

- For all other MCCs, duplication detection time shall be 24 hours.

In an SNPN, upon reception of a new message, the MS/UE shall perform duplication detection on the messages. Those messages that are received in the certain time period specified by the duplication detection time are subject to duplication detection. The MS/UE shall not perform duplication detection on messages whose duplication detection time has elapsed. The value of the duplication detection time to be used by the MS/UE shall be 24 hours.

The MS/UE shall check:

1) whether the Serial Number associated with the Message Identifier of the new message matches the Serial Number of any of those messages with the same Message Identifier that have been received and displayed to the subscriber and that are subject to the duplication detection.

Additionally, the MS/UE may check:

2) other criteria for detecting duplicates. An example of such a criterion is whether the actual contents of the two messages is the same.

If criterion 1 is fulfilled and any implemented additional checks (as described in criterion 2) are also met, then the MS/UE shall consider the new message as duplicated and shall ignore it. If the Geographical Scope is not PLMN/SNPN wide the validity of the Serial Number may be considered as described in clause 9.4.1.2.1.

For ETWS, duplicate message detection shall be performed independently for primary and secondary notifications.

\*\*\* Next change \*\*\*

#### 9.1.3.1 General

In GSM and UMTS, the cell broadcast service can be used to transfer CBS messages related to public warning. This requires reception of CBS messages to be permanently activated in the mobile terminal.

Warning message delivery is similar to cell broadcast service. It permits a number of unacknowledged warning messages to be broadcast to MS/UEs within a particular area. Reception of warning messages is enabled as defined later on in this specification.

For warning messages received from a PLMN, 3GPP TS 31.102 [18] defines a USIM data file for configuration of warning messages reception. In case of a non-existing or empty USIM data file, the MS/UE accepts all warning messages on all PLMNs. As specified in 3GPP TS 31.102 [18], the MS/UE can be configured to ignore all warning messages received in its HPLMN or in a PLMN equivalent to it. As specified in 3GPP TS 31.102 [18], the MS/UE can be configured to ignore all warning messages received in a VPLMN or in a PLMN equivalent to it.

A UE in limited service state, and configured according to the USIM data file to display warning messages on that PLMN, shall display warning messages to the user.

For warning messages received from an SNPN, 3GPP TS 23.122 [xx] defines configuration parameters in each entry of the "list of subscriber data" for configuration of warning message reception. In case the configuration parameters are not present in the selected entry of the "list of subscriber data", the UE accepts all warning messages on all SNPNs. As specified in 3GPP TS 23.122 [xx], when using an entry of the "list of subscriber data" to access an SNPN, the UE can be configured to ignore all warning messages received in the subscribed SNPN of the selected entry of the "list of subscriber data". As specified in 3GPP TS 23.122 [xx], when using an entry of the "list of subscriber data" to access an SNPN, the UE can be configured to ignore all warning messages received in an SNPN other than the subscribed SNPN of the selected entry of the "list of subscriber data"..

Editor's note [WI eNPN, CR#0225]: Whether the configuration parameter for reception of warning messages in an SNPN is stored in the ME or in the USIM when the UE is using a PLMN subscription to access an SNPN needs to be confirmed by SA1.

In GSM, an ETWS capable MS uses the procedure as outlined in clause 9.1.3.2. See 3GPP TS 44.018 [26] and 3GPP TS 44.060 [27] for details on the radio interface.

In UMTS, an ETWS capable UE uses the procedure as outlined in clause 9.1.3.3. See 3GPP TS 25.331 [16] for details on the radio interface.

In E-UTRAN, an ETWS capable UE or a CMAS capable UE uses the procedures as outlined in clause 9.1.3.4. See 3GPP TS 36.331 [36] for details on the radio interface.

In NG-RAN, an ETWS capable UE or a CMAS capable UE uses the procedures as outlined in clause 9.1.3.5. See 3GPP TS 36.331 [36] and 3GPP TS 38.331 [48] for details on the radio interface.

\*\*\* Next change \*\*\*

##### 9.1.3.5.2 Warning Message Delivery Procedure

The warning message to be broadcast is delivered via AMFs to multiple NG-RAN nodes. The NG-RAN node(s) are responsible for scheduling the broadcast of the new message and the repetitions in each cell.

The overall warning message delivery procedure is presented in figure 9.1.3.5.2-1:



Figure 9.1.3.5.2-1: Warning message delivery procedure in NG-RAN

0. Network registration and security (e.g. mutual authentication) procedures are performed.

NOTE 1: This step is performed each time a UE is attached to a network (e.g. after each power on).

1. CBE (e.g. Information Source such as PSAP or Regulator) sends emergency information (e.g. "warning type", "warning message", "impacted area", "time period") to the CBC. The CBCF shall authenticate this request.

NOTE 2: A warning message can include a language-independent content mapped to an event or a disaster that is compatible with texts used to describe user information contained in the content of a CBS-Message-Information-Page transparently passed from CBC to UEs if the ePWS language-independent content functionality (see clause 8.3) is supported by CBE.

2. Using the "impacted area" information, the CBCF identifies which AMFs need to be contacted and determines the information to be placed into the Warning Area List NG-RAN Information Element. The CBCF sends a Write-Replace Warning Request NG-RAN message containing the warning message to be broadcast and the delivery attributes (Message Identifier, Serial Number, list of NG-RAN TAIs, Warning Area List NG-RAN, OMC ID, CWM Indicator, Send Write-Replace-Warning-Indication, Global RAN Node ID, Warning Area Coordinates) to AMFs.

The warning messages use the coding scheme for CBS data specified in 3GPP TS 23.038 [3].

The list of NG-RAN TAIs is only used by the AMF. The AMF uses it for selecting which NG-RAN node(s) to forward the Write-Replace Warning Request NG-RAN message to.

If the Write-Replace Warning Request NG-RAN message is sent to reload cells served by a NG-RAN node, for which the CBCF has previously received a Restart Indication (see clause 15A.1 of TS 23.007 [38]), the CBCF shall include the Global RAN Node ID IE with the identity of this NG-RAN node in the Write-Replace Warning Request NG-RAN message.

The Warning Area List NG-RAN shall be a list of Cell IDs or a list of NG-RAN TAIs or one or more Emergency Area IDs. The Warning Area List NG-RAN is only used by the NG-RAN node. The NG-RAN node is configured with the NG-RAN TAI(s) and Cell ID(s) it serves and the Emergency Area ID(s) that it belongs to. The NG-RAN node checks for any match of the contents of the Warning Area List NG-RAN with these IDs to identify the cells where to distribute the warning message. The Warning Area List NG-RAN is an optional information element. If the Warning Area List NG-RAN is absent, it shall be interpreted as "all cells on the NG-RAN node". The number of cell IDs will be limited by the message size on N50 and N2. An Emergency Area ID is unique within the PLMN or SNPN.

The message may include an OMC ID. If present, it indicates the OMC to which the Trace record generated in step 9 is destined. Co-location of that OMC with the CBCF is an operator option.

The CBCF shall set the Concurrent Warning Message (CWM) indicator in all Write-Replace Warning Request NG-RAN messages, if the PLMN or SNPN supports concurrent warning message broadcasts.

The CBCF shall not include the "digital signature" or "timestamp" information.

The CBCF shall set the Send Write-Replace-Warning Indication element in case the AMF is requested to forward the Broadcast Scheduled Area List in a Write-Replace Warning Indication NG-RAN for the warning message.

The CBCF includes the Warning Area Coordinates in the Write-Replace-Warning-Request-NG-RAN message based on operator policy.

3. The AMF sends a Write-Replace Warning Confirm NG-RAN message that indicates to the CBCF that the AMF has started to distribute the warning message to NG-RAN nodes.

The Write-Replace Warning Confirm NG-RAN message may contain the *Unknown Tracking Area List* IE. The *Unknown Tracking Area List* IE identifies the Tracking Areas that are unknown to the AMF and where the Request cannot be delivered.

If this message is not received by the CBCF within an appropriate time period, the CBCF can attempt to deliver the warning message via another AMF in the same AMF region.

4. Upon reception of the Write-Replace Confirm NG-RAN messages from the AMFs, the CBCF may confirm to the CBE that it has started to distribute the warning message.

5. The AMF forwards Write-Replace Warning Message Request NG-RAN to NG-RAN nodes. The AMF shall use the list of NG-RAN TAIs to determine the NG-RAN nodes in the delivery area. If the list of NG-RAN TAIs is not included and no Global RAN Node ID has been received from the CBCF, the message is forwarded to all NG-RAN nodes that are connected to the AMF, subject to the RAT Selector NG-RAN. If a Global RAN Node ID has been received from the CBCF, the AMF shall forward the message only to the NG-RAN node indicated by the Global RAN Node ID IE.

6. When the CBCF sends warning messages to multiple AMFs for the same warning area, the NG-RAN node may receive the same message from multiple AMFs. The NG-RAN node detects duplicate messages by checking the message identifier and serial number fields within the warning message. If any redundant messages are detected only the first one received will be broadcasted by the cells. The NG-RAN node shall use the Warning Area List NG-RAN information to determine the cell(s) in which the message is to be broadcast. The NG-RAN nodes return a Write Replace Warning Message Response to the AMF, even if it was a duplicate.

If there is a warning broadcast message already ongoing and the CWM Indicator is included in the Write-Replace Warning Request NG-RAN message, the NG-RAN node does not stop the existing broadcast message but starts broadcasting the new message concurrently. Otherwise the NG-RAN node shall immediately replace the existing broadcast message with the newer one.

NOTE 3: If concurrent warning messages are not supported, this requires the CBE/CBCF to take care that 'lower' priority warnings are not sent while a higher priority warning is still being sent.

The NG-RAN node broadcasts the message frequently according to the attributes set by the CBCF that originated the warning message distribution.

7. If the UE has been configured to receive warning messages, and the UE is configured to accept warnings on that PLMN (see 3GPP TS 31.102 [18]) or SNPN (see 3GPP TS 23.122 [xx]), then the UE proceeds as follows:

The UE can use "warning type" values, 'earthquake', 'tsunami' or 'earthquake and tsunami', immediately to alert the user. When "warning type" is 'test', the UE silently discards the primary notification, but the UE specially designed for testing purposes may proceed with the following procedures.

The UE activates reception of the broadcast messages containing the "warning message".

If the Warning Area Coordinates are not present:

The UE indicates the contents of the "warning message" to the user.

If the Warning Area Coordinates are present, and if the UE is unable to determine its location:

The UE indicates the contents of the "warning message" to the user.

If the Warning Area Coordinates are present, and the UE determines it is inside the Warning Area Coordinates:

The UE indicates the contents of the "warning message" to the user.

If the Warning Area Coordinates are present, and the UE determines it is outside the Warning Area Coordinates:

The UE does not indicate the contents of the "warning message" to the user. The UE shall store the "warning message" in the list of "warning messages" to be checked for geo-fencing during a UE implementation specific time which shall not be greater than 24 hours. Upon expiration of the UE implementation specific time, the UE shall remove the stored "warning message" from the list of "warning messages" to be checked for geo-fencing.

If the "warning message" is a geo-fencing trigger message (see clause 9.4.1.2.2) then:

- if the list of "warning messages" to be checked for geo-fencing stored at the UE is not empty, the UE shall, for each "warning message" stored at the UE in the list of "warning messages" to be checked for geo-fencing, compare the Serial Number and Message Identifier combination of the stored "warning message" to the list of Serial Number and Message Identifier combinations included in the Warning Message Content IE (CB Data) of the geo-fencing trigger message and encoded as specified in ATIS-0700041 [47], and:

1) if the Serial Number and Message Identifier combination of the stored "warning message" matches one of the Serial Number and Message Identifier combinations included in the geo-fencing trigger message, and:

a) the UE:

i) is able to determine its location and determines it is inside the Warning Area Coordinates of the stored "warning message"; or

ii) is unable to determine its location,

indicate the contents of the stored "warning message" to the user, remove the "warning message" from the list of "warning messages" to be checked for geo-fencing and then discard the geo-fencing trigger message; or

b) the UE is able to determine its location and determines it is outside the Warning Area Coordinates of the stored "warning message", discard the geo-fencing trigger message; or

2) if none of Serial Number and Message Identifier combinations of the stored "warning message" matches any of the Serial Number and Message Identifier combinations included in the Warning Message Content IE (CB Data) of the geo-fencing trigger message, discard the geo-fencing trigger message; and

- if the list of "warning messages" to be checked for geo-fencing stored at the UE is empty, the UE shall discard the geo-fencing trigger message.

If a language-independent content mapped to an event or a disaster (e.g. character such as Unicode based pictogram mapping to a disaster) is included as part of user information contained in the content of a CBS-Message-Information-Page transparently passed from CBC to UEs:

- UEs with user interface which support the ePWS language-independent content functionality (see clause 8.3) and which are capable of displaying text-based warning messages should be capable of displaying the entire warning message that they receive.

Editor's note [WI: ePWS, CR#203]: FFS on what character(s) such as Unicode based pictogram(s) are the language-independent content mapped to an event or a disaster.

8. If the Send Warning-Message-Indication parameter was present in the Write-Replace Warning Request NG‑RAN and it is configured in the AMF based on operator policy, the AMF shall forward the Broadcast Scheduled Area Lists in a Write-Replace Warning Indication(s) NG-RAN to the CBCF. The Broadcast Scheduled Area List shall contain the Broadcast Completed Area List the AMF has received from the NG-RAN node. The MME may aggregate Broadcast Completed Area Lists it receives from NG-RAN nodes.

NOTE 4: Support for sending of Write-Replace Warning Indication(s) NG-RAN to the CBCF is optional in the AMF.

9. From the Write-Replace Warning Response messages returned by NG-RAN nodes the AMF determines the success or failure of the delivery and creates a trace record. Any OMC ID received in step 2 is written to the trace record to permit the O&M system to deliver them to the desired destination.

\*\*\* Next change \*\*\*

##### 9.4.1.2.1 Serial Number

This parameter is a 16-bit integer which identifies a particular CBS message (which may be one to fifteen pages in length) from the source and type indicated by the Message Identifier and is altered every time the CBS message with a given Message Identifier is changed.

The two octets of the Serial Number field are divided into a 2-bit Geographical Scope (GS) indicator, a 10‑bit Message Code and a 4-bit Update Number as shown below:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Octet 1 | | | | | | | | Octet 2 | | | | | | | |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| GS | | Message Code | | | | | | | | | | Update Number | | | |

The most significant bit of the update number is octet 2 bit 3. The most significant bit of the Message Code is octet 1 bit 5 and the least significant bit of the Message Code is octet 2 bit 4. The most significant bit of the Geographical Scope is octet 1 bit 7.

1. Message Code:

The Message Code differentiates between CBS messages from the same source and type (i.e. with the same Message Identifier). Message Codes are for allocation by PLMN or SNPN operators.

The Message Code identifies different message themes. For example, let the value for the Message Identifier be "Automotive Association" (= source), "Traffic Reports" (= type). Then "Crash on A1 J5" could be one value for the message code, "Cow on A32 J4" could be another, and "Slow vehicle on M3 J3" yet another.

In the case of transmitting CBS messages for ETWS, i.e. the Message Identifier has a value for ETWS (see clause 9.4.1.2.2), a part of Message Code can be used to command mobile terminals to activate emergency user alert and message popup in order to alert the users. Message Code format for this purpose is as follows:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 |
| Emergency User Alert | Popup |  | | | | | | | |

NOTE 1: The exact behaviour of the UE is specified in 3GPP TS 22.268 [28]. Whether the UE setting is overridden is subject to regulatory requirements.

NOTE 2: Emergency user alert includes alerting tone and other user alerting means such as vibration, according to the UE's capability. The types of alert (e.g. the kind of tone, vibration, etc) are implementation　dependent and may be subject to regulatory requirements.

NOTE 3: The popup indication shall take precedence over the setting of the DCS Message class (see 3GPP TS 23.038 [3]), and the Geographical Scope with regard to Display Mode 'immediate'.

The codings of the Emergency User Alert and Popup fields are shown below:

|  |  |  |
| --- | --- | --- |
| Field | Code | Instruction to Terminal |
| Emergency User Alert | 0 | No instruction as to emergency user alert. |
| 1 | Activate emergency user alert. |
| Popup | 0 | No instruction as to popup. |
| 1 | Activate popup on the display. |

1. Geographical Scope:

The Geographical Scope (GS) indicates the geographical area over which the Message Code is unique, and the display mode. The CBS message is not necessarily broadcast by all cells within the geographical area. When two CBS messages are received with identical Serial Numbers/Message Identifiers in two different cells, the Geographical Scope may be used to determine if the CBS messages are indeed identical.

In particular, the Geographical Scope tells the mobile if the CBS message is:

- only cell wide (which means that if a message is displayed it is desirable that the message is removed from the screen when the UE selects the next cell and if any CBS message is received in the next cell it is to be regarded as "new"), or

- PLMN/SNPN wide (which means that the Message Code and/or Update Number must change in the next cell, of the PLMN or SNPN, for the CBS message to be "new". The CBS message is only relevant to the PLMN or SNPN in which it is broadcast, so any change of PLMN (including a change to another PLMN which is an ePLMN) or SNPN means the CBS message is "new"), or

- Location Area wide (in GSM) (which means that a CBS message with the same Message Code and Update Number may or may not be "new" in the next cell according to whether the next cell is in the same Location Area as the current cell), or

- Service Area wide (in UMTS) (which means that a CBS message with the same Message Code and Update Number may or may not be "new" in the next cell according to whether the next cell is in the same Service Area as the current cell), or

NOTE 4: According to 3GPP TS 23.003 [2] a Service Area consists of one cell only.

- Tracking Area wide (in E-UTRAN) (which means that a warning message with the same Message Code and Update Number may but need not be "new" in the next cell according to whether the next cell is in the same Tracking Area as the current cell), or

- Tracking Area wide (in NG-RAN) (which means that a warning message with the same Message Code and Update Number may but need not be "new" in the next cell according to whether the next cell is in the same Tracking Area as the current cell).

The display mode indicates whether the CBS message is supposed to be on the display all the time ("immediate") or only when the user wants to see it ("normal"). In either case, the CBS message will be displayed only if its Message Identifier is contained within the "search list" of the mobile (see clause 9.3.2). These display modes are indicative of intended use, without indicating a mandatory requirement or constraining the detailed implementation by mobile manufacturers. The user may be able to select activation of these different modes.

The coding of the Geographical Scope field is shown below:

|  |  |  |
| --- | --- | --- |
| GS Code | Display Mode | Geographical Scope |
| 00 | Immediate | Cell wide |
| 01 | Normal | PLMN/SNPN wide |
| 10 | Normal | Location Area wide in GSM, Service Area wide in UMTS, Tracking Area wide in E-UTRAN, Tracking Area wide in NG-RAN |
| 11 | Normal | Cell wide |

Immediate = default direct display.  
Normal = default display under user interaction.

Code 00 is intended for use by the network operators for base station IDs but this code can also be used for other applications. Use of GS=00 takes precedence over the setting of the DCS Message class (see 3GPP TS 23.038 [3])

1. Update Number:

The Update Number indicates a change of the message content of the same CBS message, i.e. the CBS message with the same Message Identifier, Geographical Scope, and Message Code.

In other words, the Update Number will differentiate between older and newer versions of the same CBS message, within the indicated geographical area. A new CBS message may have Update Number 0000; however this number will increment by 1 for each update.

##### 9.4.1.2.2 Message Identifier

This parameter identifies the source and type of the CBS message. For example, "Automotive Association" (= source), "Traffic Reports" (= type) could correspond to one value. A number of CBS messages may originate from the same source and/or be of the same type. These will be distinguished by the Serial Number. The Message Identifier is coded in binary.

The ME shall attempt to receive the CBS messages whose Message Identifiers are in the "search list". This "search list" shall contain the Message Identifiers stored in the EFCBMI, EFCBMID and EFCBMIR files on the SIM (see 3GPP TS 11.11) and any Message Identifiers stored in the ME in a "list of CBS messages to be received". If the ME has restricted capabilities with respect to the number of Message Identifiers it can search for, the Message Identifiers stored in the SIM shall take priority over any stored in the ME.

The use/application of the Message Identifier is shown in the following table, with octet 3 of the Message Identifier in hex shown first, followed by octet 4. Thus "1234" (hex) represents octet 3 = 0001 0010 and octet 4 = 0011 0100.

In a PLMN, the MS shall discard a CBS message in Message Identifier value range "A000hex-AFFFhex" unless it is received from:

- HPLMN;

- EHPLMN; or

- PLMN that is equivalent to either HPLMN or EHPLMN.

In an SNPN, the MS shall discard a CBS message in Message Identifier value range "A000hex-AFFFhex" unless it is received from a subscribed SNPN.

Networks shall only use Message Identifiers from the range 4352 – 6399 (1100 hex – 18FF hex) for Public Warning System as defined in 3GPP TS 22.268 [28]. If a message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message. Processing of different language codes is specified in clause 9.4.1.2.3 and clause 9.4.2.2.4.

|  |  |  |
| --- | --- | --- |
| **Decimal** | **Hex** | **Meaning** |
| **0 – 999** | **0000 – 03E7** | To be allocated by GSMA(see GSMA AD.26 [25]). If a Message Identifier from this range is in the "search list", the ME shall attempt to receive such CBS message.  This version of this document does not prohibit networks from using Message Identifiers in the range 0000 - 03E7 (hex) for Cell Broadcast Data Download to the SIM. |
| **1000** | **03E8** | LCS CBS Message Identifier for E-OTD Assistance Data message. |
| **1001** | **03E9** | LCS CBS Message Identifier for DGPS Correction Data message. |
| **1002** | **03EA** | LCS CBS Message Identifier for GPS Ephemeris and Clock Correction Data message. |
| **1003** | **03EB** | LCS CBS Message Identifier for GPS Almanac and Other Data message. |
| **1004 - 4095** | **03EC – 0FFF** | Intended for standardization in future versions of this document. These values shall not be transmitted by networks that are compliant to this version of this document. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message. |
| **4096 - 4223** | **1000 – 107F** | Networks shall only use Message Identifiers from this range for Cell Broadcast Data Download in "clear" (i.e. unsecured) to the SIM (see 3GPP TS 11.14). If a message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.  Not settable by MMI |
| **4224 - 4351** | **1080 – 10FF** | Networks shall only use Message Identifiers from this range for Cell Broadcast Data Download secured according to 3GPP TS 23.048 [15] to the SIM (see 3GPP TS 11.14). If a message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.  Not settable by MMI |
| **4352** | **1100** | ETWS CBS Message Identifier for earthquake warning message. |
| **4353** | **1101** | ETWS CBS Message Identifier for tsunami warning message. |
| **4354** | **1102** | ETWS CBS Message Identifier for earthquake and tsunami combined warning message. |
| **4355** | **1103** | ETWS CBS Message Identifier for test message.  The UE silently discards this message. A UE specially designed for testing purposes may display its contents. |
| **4356** | **1104** | ETWS CBS Message Identifier for messages related to other emergency types. |
| **4357 - 4359** | **1105 - 1107** | ETWS CBS Message Identifier for future extension. |
| **4360 - 4369** | **1108 - 1111** | Intended for standardization in future versions of this document. These values shall not be transmitted by networks that are compliant to this version this document. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message. |
| **4370** | **1112** | CMAS CBS Message Identifier for CMAS Presidential Level Alerts.  EU-Alert Level 1 Message Identifier for the local language as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 0 Message Identifier.  Not settable by MMI. |
| **4371** | **1113** | CMAS CBS Message Identifier for CMAS Extreme Alerts with Severity of Extreme, Urgency of Immediate, and Certainty of Observed.  EU-Alert Level 2 Message Identifier for the local language as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier.  Settable by MMI  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4372** | **1114** | CMAS CBS Message Identifier for CMAS Extreme Alerts with Severity of Extreme, Urgency of Immediate, and Certainty of Likely.  EU-Alert Level 2 Message Identifier for the local language as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier.  Settable by MMI  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4373** | **1115** | CMAS CBS Message Identifier for CMAS Severe Alerts with Severity of Extreme, Urgency of Expected, and Certainty of Observed.  EU-Alert Level 3 Message Identifier for the local language as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier.  Settable by MMI  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4374** | **1116** | CMAS CBS Message Identifier for CMAS Severe Alerts with Severity of Extreme, Urgency of Expected, and Certainty of Likely.  EU-Alert Level 3 Message Identifier for the local language as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier.  Settable by MMI  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4375** | **1117** | CMAS CBS Message Identifier for CMAS Severe Alerts with Severity of Severe, Urgency of Immediate, and Certainty of Observed.  EU-Alert Level 3 Message Identifier for the local language as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier.  Settable by MMI  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4376** | **1118** | CMAS CBS Message Identifier for CMAS Severe Alerts with Severity of Severe, Urgency of Immediate, and Certainty of Likely.  EU-Alert Level 3 Message Identifier for the local language as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier.  Settable by MMI  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4377** | **1119** | CMAS CBS Message Identifier for CMAS Severe Alerts with Severity of Severe, Urgency of Expected, and Certainty of Observed.  EU-Alert Level 3 Message Identifier for the local language as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier.  Settable by MMI  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4378** | **111A** | CMAS CBS Message Identifier for CMAS Severe Alerts with Severity of Severe, Urgency of Expected, and Certainty of Likely.  EU-Alert Level 3 Message Identifier for the local language as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier.  Settable by MMI  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4379** | **111B** | CMAS CBS Message Identifier for Child Abduction Emergency (or Amber Alert).  EU-Amber Message Identifier for the local language as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier.  Settable by MMI  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4380** | **111C** | CMAS CBS Message Identifier for the Required Monthly Test.  According to CMAS requirements (see 3GPP TS 22.268 [28]), if this Message Identifier is in the "search list", the ME shall attempt to receive this CBS message. |
| **4381** | **111D** | CMAS CBS Message Identifier for CMAS Exercise.  According to CMAS requirements (see 3GPP TS 22.268 [28]), if this Message Identifier is in the "search list", the ME shall attempt to receive this CBS message. |
| **4382** | **111E** | CMAS CBS Message Identifier for operator defined use.  According to CMAS requirements (see 3GPP TS 22.268 [28]), if this Message Identifier is in the "search list", the ME shall attempt to receive this CBS message. |
| **4383** | **111F** | CMAS CBS Message Identifier for CMAS Presidential Level Alerts for additional languages.  EU-Alert Level 1 Message Identifier for additional languages as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 0 Message Identifier for additional languages.  Not settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME. |
| **4384** | **1120** | CMAS CBS Message Identifier for CMAS Extreme Alerts with Severity of Extreme, Urgency of Immediate, and Certainty of Observed for additional languages.  EU-Alert Level 2 Message Identifier for additional languages as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier for additional languages.  Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4385** | **1121** | CMAS CBS Message Identifier for CMAS Extreme Alerts with Severity of Extreme, Urgency of Immediate, and Certainty of Likely for additional languages.  EU-Alert Level 2 Message Identifier for additional languages as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier for additional languages.  Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4386** | **1122** | CMAS CBS Message Identifier for CMAS Severe Alerts with Severity of Extreme, Urgency of Expected, and Certainty of Observed for additional languages.  EU-Alert Level 3 Message Identifier for additional languages as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier for additional languages.  Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4387** | **1123** | CMAS CBS Message Identifier for CMAS Severe Alerts with Severity of Extreme, Urgency of Expected, and Certainty of Likely for additional languages.  EU-Alert Level 3 Message Identifier for additional languages as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier for additional languages.Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4388** | **1124** | CMAS CBS Message for CMAS Severe Alerts with Severity of Severe, Urgency of Immediate, and Certainty of Observed for additional languages.  EU-Alert Level 3 Message Identifier for additional languages as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier for additional languages.Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4389** | **1125** | CMAS CBS Message for CMAS Severe Alerts with Severity of Severe, Urgency of Immediate, and Certainty of Likely for additional languages.  EU-Alert Level 3 Message Identifier for additional languages as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier for additional languages.  Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4390** | **1126** | CMAS CBS Message Identifier for CMAS Severe Alerts with Severity of Severe, Urgency of Expected, and Certainty of Observed for additional languages.  EU-Alert Level 3 Message Identifier for additional languages as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier for additional languages.  Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4391** | **1127** | CMAS CBS Message Identifier for CMAS Severe Alerts with Severity of Severe, Urgency of Expected, and Certainty of Likely for additional languages.  EU-Alert Level 3 Message Identifier for additional languages as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier for additional languages.  Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4392** | **1128** | CMAS CBS Message Identifier for Child Abduction Emergency (or Amber Alert) for additional languages.  EU-Amber Message Identifier for additional languages as defined in ETSI TS 102 900 [32].  Korean Public Alert System (KPAS) Class 1 Message Identifier for additional languages.  Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4393** | **1129** | CMAS CBS Message Identifier for the Required Monthly Test for additional languages.  According to CMAS requirements (see 3GPP TS 22.268 [28]), if this Message Identifier is in the "search list", the ME shall attempt to receive this CBS message dependent on the language indicated in the CBS message and the language indicator settings in the ME. |
| **4394** | **112A** | CMAS CBS Message Identifier for CMAS Exercise for additional languages.  According to CMAS requirements (see 3GPP TS 22.268 [28]), if this Message Identifier is in the "search list", the ME shall attempt to receive this CBS message dependent on the language indicated in the CBS message and the language indicator settings in the ME. |
| **4395** | **112B** | CMAS CBS Message Identifier for operator defined use for additional languages.  According to CMAS requirements (see 3GPP TS 22.268 [28]), if this Message Identifier is in the "search list", the ME shall attempt to receive this CBS message dependent on the language indicated in the CBS message and the language indicator settings in the ME. |
| **4396** | **112C** | CMAS CBS Message Identifier for CMAS Public Safety Alerts.  Settable by MMI.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4397** | **112D** | CMAS CBS Message Identifier for CMAS Public Safety Alerts for additional languages.  Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4398** | **112E** | CMAS CBS Message Identifier for CMAS State/Local WEA Test.  Settable by MMI.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4399** | **112F** | CMAS CBS Message Identifier for CMAS State/Local WEA Test for additional languages.  Settable by MMI.  The ME shall receive the messages dependent on the language indicated in the CBS message and the language indicator settings in the ME.  For subscriber opt-out requirements, see 3GPP TS 22.268 [28]. |
| **4400** | **1130** | CMAS CBS Message Identifier for geo-fencing trigger messages. |
| **4401** | **1131** | Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality.  Not applicable for US WEA |
| **4402** | **1132** | Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when an earthquake occurs.  Not applicable for US WEA |
| **4403** | **1133** | Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a volcanic eruption occurs.  Not applicable for US WEA |
| **4404** | **1134** | Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is water (e.g. flood, typhoon, hurricane or tsunami) occurs.  Not applicable for US WEA |
| **4405** | **1135** | Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is fire (e.g. forest fire or building fire) occurs.  Not applicable for US WEA |
| **4406** | **1136** | Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is pressure (e.g. landslide or avalanche) occurs.  Not applicable for US WEA |
| **4407** | **1137** | Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is wind (e.g. tornado or gale) occurs.  Not applicable for US WEA |
| **4408** | **1138** | Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is dust (e.g. yellow dust or sandstorm) occurs.  Not applicable for US WEA |
| **4409** | **1139** | Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is chemical hazard (e.g. radiation leak or toxic substance leak) occurs.  Not applicable for US WEA |
| **4410** | **113A** | Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when an epidemic occurs.  Not applicable for US WEA |
| **4411** | **113B** | Non-ETWS CBS Message Identifier for test message dedicated to UEs with no user interface and with ePWS functionality.  Not applicable for US WEA |
| **4412** | **113C** | ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality.  Not applicable for Japan ETWS |
| **4413** | **113D** | ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when an earthquake occurs.  Not applicable for Japan ETWS |
| **4414** | **113E** | ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a volcanic eruption occurs.  Not applicable for Japan ETWS |
| **4415** | **113F** | ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is water (e.g. flood, typhoon, hurricane or tsunami) occurs.  Not applicable for Japan ETWS |
| **4416** | **1140** | ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is fire (e.g. forest fire or building fire) occurs.  Not applicable for Japan ETWS |
| **4417** | **1141** | ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is pressure (e.g. landslide or avalanche) occurs.  Not applicable for Japan ETWS |
| **4418** | **1142** | ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is wind (e.g. tornado or gale) occurs.  Not applicable for Japan ETWS |
| **4419** | **1143** | ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is dust (e.g. yellow dust or sandstorm) occurs.  Not applicable for Japan ETWS |
| **4420** | **1144** | ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when a disaster whose characteristic is chemical hazard (e.g. radiation leak or toxic substance leak) occurs.  Not applicable for Japan ETWS |
| **4421** | **1145** | ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality when an epidemic occurs.  Not applicable for Japan ETWS |
| **4422** | **1146** | ETWS CBS Message Identifier for test message dedicated to UEs with no user interface and with ePWS functionality.  Not applicable for Japan ETWS |
| **4423 - 6399** | **1147 – 18FF** | Intended as PWS range in future versions of the present document.  These values shall not be transmitted by networks that are compliant to this version of this document. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message. |
| **6400** | **1900** | EU-Info Message Identifier for the local language as defined in ETSI TS 102 900 [32]. |
| **6401 – 40959** | **1901 – 9FFF** | Intended for standardization in future versions of this document . These values shall not be transmitted by networks that are compliant to this version of this document. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message. |
| **40960 - 45055** | **A000 - AFFF** | PLMN/SNPN operator specific range. The type of information provided by PLMN or SNPN operators using these Message Identifiers is not guaranteed to be the same across different PLMNs or SNPNs. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message. In a PLMN, the MS shall discard messages in this MI value range unless received from HPLMN, EHPLMN or PLMN that is equivalent to HPLMN or EHPLMN. In an SNPN, the MS shall discard messages in this MI value range unless received from a subscribed SNPN. |
| **45056 - 61439** | **B000 - EFFF** | Intended as PLMN/SNPN operator specific range in future versions of this document. These values shall not be transmitted by networks that are compliant to this version of this document. If a Message Identifier from this range is in the "search list", then the ME shall attempt to receive this CBS message. |
| **61440 - 65534** | **F000 - FFFE** | Intended as PLMN/SNPN operator specific range in future versions of this document. These values shall not be transmitted by networks that are compliant to this version of this document. If a Message Identifier from this range is in the "search list", then the ME shall attempt to receive this CBS message.  Not settable by MMI. |
| **65535** | **FFFF** | Reserved, and should not be used for new services, as this value is used on the SIM to indicate that no Message Identifier is stored in those two octets of the SIM. If this Message Identifier is in the "search list", the ME shall attempt to receive this CBS message.  Not settable by MMI. |

Generally, the MMI for entering any Message in the ME is left to the manufacturers' discretion. However, the codes allowed to be set by MMI in the table above shall be capable of being specified via their decimal representation i.e.:

Octet 3 Octet 4.

0000 0000 0000 0000 (decimal '000').

0000 0000 0000 0001 (decimal '001').

0000 0000 0000 0010 (decimal '002').

0000 0000 0000 0011 (decimal '003').

: : :

0000 1111 1111 1111 (decimal '4095').

0001 0001 0000 0000 (decimal '4352').

: : :

0001 0001 0001 0001 (decimal '4369').

0001 0001 0001 0011 (decimal '4371').

: : :

0001 0001 0001 1110 (decimal '4382').

0001 0001 0010 0000 (decimal '4384').

: : :

1110 1111 1111 1111 (decimal '61439').

\*\*\* End of changes \*\*\*