ATIS-0700006.v003

ATIS Standard on -

Wireless Emergency Alert (WEA) 3.0 via GSM/UMTS Cell Broadcast Service Specification

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Wireless Emergency Alert (WEA) 3.0 via GSM/UMTS Cell Broadcast Service Specification

Alliance for Telecommunications Industry Solutions

Approved October 21, 2019

Abstract

This Standard describes the use of the GSM/UMTS Cell Broadcast Service for the broadcast of WEA messages and includes the mapping of WEA application level messages to the Cell Broadcast Service message structure. This Standard supports the requirements of the FCC Report & Order 16-127 and the FCC Order on Reconsideration 17-143 and is an update to ATIS-0700006.v002.

Foreword

The Alliance for Telecommunication Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The Wireless Technologies and Systems Committee (WTSC) develops and recommends standards and technical reports related to wireless and/or mobile services and systems, including service descriptions and wireless technologies. WTSC develops and recommends positions on related subjects under consideration in other North American, regional, and international standards bodies.

The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages. The word *may* denotes an optional capability that could augment the standard. The standard is fully functional without the incorporation of this optional capability.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, WTSC 1200 G Street NW, Suite 500, Washington, DC 20005.

At the time of consensus on this document, WTSC, which was responsible for its development, had the following leadership:

D. Zelmer, WTSC Chair (AT&T)

M. Younge, WTSC Vice Chair (T-Mobile)

P. Musgrove, WTSC SN Chair (AT&T)

G. Schumacher, WTSC SN Vice Chair (Sprint)

P. Sanders, Technical Editor (one2many)

The WTSC Systems and Networks (SN) Subcommittee was responsible for the development of this document.

Table of Contents

Table of Figures

Table of Tables

ATIS Standard on –

WEA 3.0 via GSM/UMTS Cell Broadcast Service Specification

Preface

The authority-to-individual emergency alerting capability to mobile devices was originally called Commercial Mobile Alert System (CMAS) in the first three Reports and Orders from the FCC. In February 2013, the FCC renamed CMAS to Wireless Emergency Alerts (WEA) with associated updates to the appropriate sections of Part 11 of the 47 CFR. Subsequently, the FCC has issued additional enhancements and rules for this government-to-individual emergency alerting capability to mobile devices, and these are identified as modifications to WEA.

Consequently, this specification may use both the term CMAS and the term WEA. These terms should be considered as equivalent terms, with WEA being the preferred term.

This ATIS specification is based upon the cumulative WEA enhancements identified in FCC WEA related Report and Orders up through the January 2018 FCC Report & Order and Second Reconsideration 18-4 [Ref 23]. For more information on the FCC regulatory history applicable to WEA as well as related ATIS WEA specifications, refer to ATIS-0700035, *Wireless Emergency Alert (WEA) 3.0 Service Description* [Ref 20]. Note that WEA 3.0 Device-Based Geo-Fencing (DBGF) is not applicable to GSM and UMTS.

1 Scope, Purpose, & Application

1.1 Scope

The scope of this standard is the support of Wireless Emergency Alert (WEA) 3.0 via the Global System for Mobile Communications (GSM)/Universal Mobile Telecommunications System (UMTS) Cell Broadcast Service. This standard covers the mapping of WEA 3.0 messages onto the 3GPP-defined Cell Broadcast Service.

This standard is not intended to describe an overall end-to-end WEA 3.0 or Cell Broadcast architecture and may include clarifications of Cell Broadcast Service that may be lacking in existing 3GPP specifications. The implementation guidelines and best practices for the Cell Broadcast Service are provided in a separate ATIS Standard [Ref 4] which contains clarifications applicable to any application that uses the Cell Broadcast Service and is not necessarily restricted to WEA.

The WEA 3.0 interface with the Federal network and the mobile device behavior upon reception of a WEA 3.0 alert is specified in separate standards [Ref 8 and Ref 9].

1.2 Purpose

The purpose of this standard is to describe the use of the GSM/UMTS Cell Broadcast Service for the broadcast of WEA 3.0 messages. The standard includes the mapping of WEA 3.0 application level messages to the Cell Broadcast Service message structure.

1.3 Application

This standard is applicable to the mapping of WEA 3.0 messages to the Cell Broadcast Service on GSM or UMTS networks.

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this ATIS Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this ATIS Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

[Ref 1] FCC 08-99, *Federal Communications Commission First Report and Order In the Matter of The Commercial Mobile Alert System*; April 9, 2008.[1]

[Ref 2] 3GPP TS 23.041, *3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Technical realization of Cell Broadcast Service (CBS).*[2]

[Ref 3] 3GPP TS 25.419, *3rd Generation Partnership Project; Technical Specification Group RAN; UTRAN Iu-BC Interface: Service Area Broadcast Protocol (SABP).*[2]

[Ref 4] ATIS-0700007, *Implementation Guidelines and Best Practices for GSM/UMTS Cell Broadcast Service Specification*. [3]

[Ref 5] FCC 16-127, *Federal Communications Commission Report and Order and Further Notice of Proposed Rulemaking In the Matter of Wireless Emergency Alerts Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*; September 29, 2016.[1]

[Ref 6] INCITS 31-2009, *Codes for the Identification of Counties and Equivalent Areas of the United States, Puerto Rico, and the Insular Areas;* International Committee for Information Technology Standards (INCITS).[4]

[Ref 7] Void.

[Ref 8] ATIS-0700037.v002, *Wireless Emergency Alert (WEA) 3.0 Federal Alert Gateway to CMSP Gateway Interface Specification*.[3]

[Ref 9] ATIS-0700036.v002, *Wireless Emergency Alert (WEA) 3.0 Mobile Device Behavior (MDB) Specification*.[3]

[Ref 10] 3GPP TS 23.038, *3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Alphabets and language-specific information.*[2]

[Ref 11] ISO/IEC 10646:2017, *Information technology -- Universal Coded Character Set (UCS)*.[5]

[Ref 12] Void.

[Ref 13] Void.

[Ref 14] Void.

[Ref 15] 3GPP TS 25.324, *3rd Generation Partnership Project; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Broadcast/Multicast Control (BMC).*[2]

[Ref 16] ATIS-0700008.v003, *Cell Broadcast Entity (CBE) to Cell Broadcast Center (CBC) Interface Specification*.[3]

[Ref 17] 3GPP TR 25.925, *3rd Generation Partnership Project; 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Radio interface for broadcast/multicast service.*[2]

[Ref 18] 3GPP TS 44.012, *3rd Generation Partnership Project; 3rd Generation Partnership Project; Technical Specification Group GSM EDGE Radio Access Network; Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface.*[2]

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[1] This document is available from the Federal Communications Commission. < http://www.fcc.gov/ >

[2] This document is available from the 3rd Generation Partnership Project (3GPP). < http://www.3gpp.org/ >

[3] This document is available from the Alliance for Telecommunications Industry Solutions (ATIS). < http://www.atis.org >

[4] This document is available from the International Committee for Information Technology Standards (INCITS) at < https://standards.incits.org/apps/group_public/project/details.php?project_id=204 >

[5] This document is available from the International Organization for Standardization (ISO). < http://www.iso.org >

[Ref 19] 3GPP TS 48.049, *Base Station Controller - Cell Broadcast Centre (BSC-CBC) interface specification; Cell Broadcast Service Protocol (CBSP)*.[2]

[Ref 20] ATIS-0700035, *Wireless Emergency Alert (WEA) 3.0 Service Description*.[3]

[Ref 21] ATIS-0700010.v003, *Wireless Emergency Alert (WEA) 3.0 via EPS Public Warning System Specification*.[3]

[Ref 22] IETF RFC 3986, *Uniform Resource Identifiers (URIs)*.[6]

[Ref 23] FCC 18-4, *Federal Communication Communications Commission Second Report and Order and Second Order on Reconsideration In The Matter of Wireless Emergency Alerts*, January 30, 2018.[7]

3 Definitions, Acronyms, & Abbreviations

For a list of common communications terms and definitions, please visit the *ATIS Telecom Glossary*, which is located at < https://glossary.atis.org/ >.

3.1 Definitions

The following definitions are taken from the FCC First Report and Order for the Commercial Mobile Alert System [Ref 1], and from the FCC Report and Order on WEA enhancements [Ref 5]:

Alert Message: An Alert Message is a message that is intended to provide the recipient information regarding an emergency, and that meets the requirements for transmission by a Participating Commercial Mobile Service Provider (CMSP) as defined in the FCC First Report and Order for the Commercial Mobile Alert System (CMAS) [Ref 1].

Commercial Mobile Alert System: The Commercial Mobile Alert System (CMAS) refers to the voluntary emergency alerting system defined in the FCC First Report and Order [Ref 1], whereby Commercial Mobile Service Providers (CMSP) may elect to transmit Alert Messages to the public.

Commercial Mobile Service Provider: A Commercial Mobile Service Provider (or CMS Provider) is an FCC licensee providing commercial mobile service as defined in section 332 (d)(1) of the Communications Act of 1934 (47 U.S.C. 332(d)(1)). Section 332(d)(1) defines the term *commercial mobile service* as any mobile service (as defined in 47 U.S.C. 153) that is provided for profit and makes interconnected service available (a) to the public or (b) to such classes of eligible users as to be effectively available to a substantial portion of the public, as specified by regulation by the Federal Communications Commission.

County and County Equivalent: Counties are considered to be the “first-order subdivisions” of each State and statistically equivalent entity, regardless of their local designations (county, parish, borough, etc.). Thus, the following entities are considered to be equivalent to counties for legal and/or statistical purposes: The parishes of Louisiana; the boroughs and census areas of Alaska; the District of Columbia; the independent cities of Maryland, Missouri, Nevada, and Virginia; that part of Yellowstone National Park in Montana; and various entities in the possessions and associated areas. Per the INCITS 31-2009 standard [Ref 6], the Federal Processing Series (FIPS) codes for county and county equivalents are maintained by the American National Standards Institute (ANSI) and are publicly available at < https://www.census.gov/geo/reference/codes/cou.html >. As of 30 June 2017, there were 3,235 identified county and county equivalents.

Participating Commercial Mobile Service Provider: A Participating Commercial Mobile Service Provider (or a Participating CMS Provider) is a Commercial Mobile Service Provider that has voluntarily elected to transmit Alert Messages.

[6] This document is available from the Internet Engineering Task Force (IETF). < http://www.ietf.org >

[7] This document is available from the Federal Communications Commission. < http://www.fcc.gov/ >

3.2 Acronyms & Abbreviations

ANSI	American National Standards Institute
ATIS	Alliance for Telecommunications Industry Solutions
BMC	Broadcast/Multicast Control
BSC	Base Station Controller
BTS	Base Transceiver Station
CBC	Cell Broadcast Center
CBCH	Cell Broadcast Channel
CBE	Cell Broadcast Entity
CBEM	Cell Broadcast Entity Message
CBS	Cell Broadcast Service
CFR	Code of Federal Regulations
CMAC	Commercial Mobile Alert for C Interface
CMAM	Commercial Mobile Alert Message
CMAS	Commercial Mobile Alert System
CMSP	Commercial Mobile Service Provider
CTCH	Common Traffic Channel
DBGF	Device-Based Geo-Fencing
FCC	Federal Communications Commission
FIPS	Federal Processing Series
GSM	Global System for Mobile Communications
INCITS	International Committee for Information Technology Standards
OA&M	Operations, Administration, and Maintenance
RNC	Radio Network Controller
SAME	Specific Area Message Encoding
UMTS	Universal Mobile Telecommunications System
WEA	Wireless Emergency Alert

3.3 Full Reference Diagram

The following is the functional reference model diagram from Section III.B.10 of the FCC First Report and Order for the Commercial Mobile Alert System, FCC 08-99 [Ref 1]:

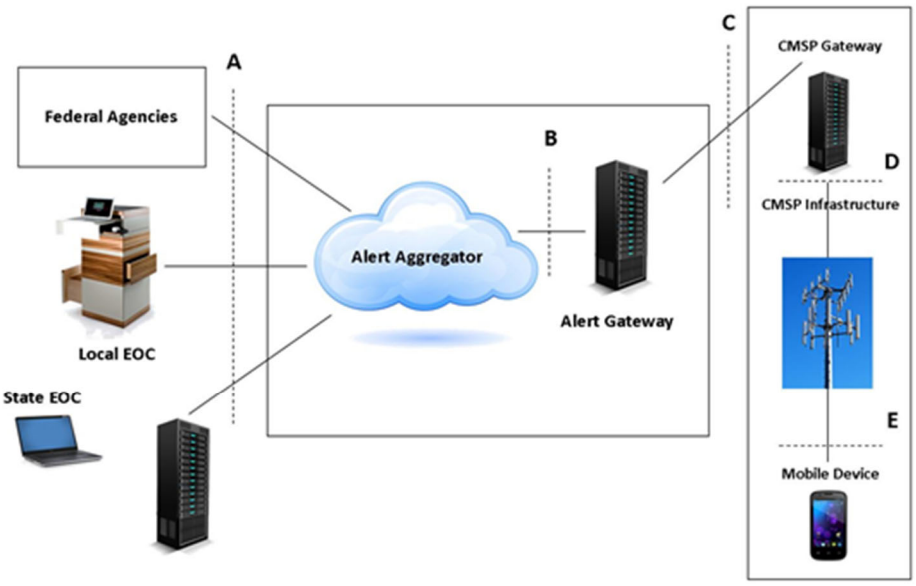

Figure 3.1: WEA Reference Architecture

4 Requirements

[WEA-2G3G-RQMT-0000] The Cell Broadcast Service (CBS) supporting WEA shall support the technical realization as specified in 3GPP TS 23.041 [Ref 2]. This clause will identify requirements specific to the mapping of the WEA service to the cell broadcast service that are not evident in existing 3GPP specifications.

4.1 Cell Broadcast Center (CBC) Requirements

The general requirements for a CBC are specified in 3GPP TS 23.041 [Ref 2]. The requirements for the CBC interface with the CMSP Gateway are defined in ATIS-0700008.v003, *Cell Broadcast Entity (CBE) to Cell Broadcast Center (CBC) Interface Specification* [Ref 16].

This clause defines the CBC requirements for the support of WEA via Cell Broadcast Service:

[WEA-2G3G-RQMT-0010] The CBC shall support ATIS-0700008.v003, *Cell Broadcast Entity (CBE) to Cell Broadcast Center (CBC) Interface Specification* [Ref 16].

[WEA-2G3G-RQMT-0020] The CBC shall retain the information to identify the Base Station Controllers (BSCs)/Radio Network Controllers (RNCs) for an Alert until the Alert is cancelled or the Alert expires.

[WEA-2G3G-RQMT-0030] The CBC shall determine the set of cells in the target area of the WEA Alert where the message is to be broadcast as defined in 3GPP TS 23.041 [Ref 2] (e.g., list of cell sites, location areas, service areas) based upon the geo-target information (e.g., geo-code, polygon, circle) provided to the CBC by the CMSP Gateway.

[WEA-2G3G-RQMT-0040] A CBC shall have the capability to adjust the CMSP Gateway-requested retransmission frequency and duration depending on network conditions or operator policy.

[WEA-2G3G-RQMT-0050] The CBC in conjunction with the capabilities of the GSM and UMTS radio networks shall perform retransmissions of the WEA alert message based upon the retransmission information provided by the CMSP Gateway.

[WEA-2G3G-RQMT-0060] The CBCs shall have the capability to be deployed in either an active-active or an active-standby server configuration with synchronization of transactional states between the multiple associated CBCs.

[WEA-2G3G-RQMT-0070] It shall not be treated or reported as an error condition or as an invalid WEA alert message if none of the cell sites serviced by the CBC are within the alert area of the WEA alert message.

[WEA-2G3G-RQMT-0080] The CBC shall manage the generation of the Serial Number for an alert message and the Serial Number shall be unique for a given Message ID per 3GPP TS 23.041 [Ref 2].

[WEA-2G3G-RQMT-0090] The CBC shall accept CBS messages which contain the CBS message IDs assigned to WEA only if that CBS message has been received from an authorized CMSP Gateway.

NOTE: The method for the CBC to authorize the CMSP Gateway and any associated error handling is beyond the scope of this Standard.

[WEA-2G3G-RQMT-0100] The CBC shall send only the short (90 characters maximum) text messages to the downstream nodes for the purpose of broadcasting over GSM and UMTS networks.

[WEA-2G3G-RQMT-0110] The CBC shall assign the same Serial Number for the broadcasting of the short (90 characters maximum) message as it assigns for broadcasting the linked long (360 characters maximum) message.

4.2 CMSP Gateway Requirements

The requirements for the CMSP Gateway interface with the Federal Alert Gateway are defined in ATIS-0700037.v002, *Wireless Emergency Alert (WEA) Federal Alert Gateway to CMSP Gateway Interface Specification* [Ref 8]. The requirements for the CMSP Gateway (as CBE) with the CBC are defined in ATIS-0700008.v003, *Cell Broadcast Entity (CBE) to Cell Broadcast Center (CBC) Interface Specification* [Ref 16].

This clause defines the CMSP Gateway requirements for the support of Cell Broadcast for WEA Alerts:

[WEA-2G3G-RQMT-0200] The CMSP Gateway shall appear as a Cell Broadcast Entity in the Cell Broadcast Service network architecture and thus shall support the CBE to CBC interface defined in ATIS-0700008.v003, *Cell Broadcast Entity (CBE) to Cell Broadcast Center (CBC) Interface Specification* [Ref 16].
[WEA-2G3G-RQMT-0210] The CMSP Gateway shall provide the CBC with the geo-target information (e.g., geo-code, polygon, circle) linked to the specified alert. As such, the CMSP Gateway is not required to know the cell sites supported by the CBCs.

[WEA-2G3G-RQMT-0220] The CMSP Gateway shall have the capability to send each WEA alert message to all or some of the CBCs served by the CMSP Gateway.

[WEA-2G3G-RQMT-0230] The CMSP Gateway shall be responsible for determining the frequency and duration of the retransmissions of WEA alert messages. The CMSP Gateway calculation of the WEA alert message frequency and duration will be based upon CMSP policies and upon the expiration date and time of the WEA alert message. The CMSP Gateway will provide the retransmission information to the CBC.

[WEA-2G3G-RQMT-0240] The CMSP Gateways shall have the capability to be deployed in either an active-active or an active-standby server configuration with synchronization of transactional state between the multiple associated CMSP Gateways.

[WEA-2G3G-RQMT-0250] The CMSP Gateway shall generate the Message ID based on the Special Handling, Urgency, Severity, Certainty, and the Text-Language parameters received from the Federal Alert Gateway. The CMSP Gateway links the generated Message ID to the alert message received from the Federal Alert Gateway.

[WEA-2G3G-RQMT-0260] The CMSP Gateway shall use the same frequency of retransmissions for both the English and Spanish language messages.

[WEA-2G3G-RQMT-0270] When an alert update request is received from the Federal Alert Gateway, the CMSP Gateway shall send requests to cancel the old English and the linked old Spanish message, if present, followed by requests to broadcast the new English message and the new Spanish message, if Spanish message text was provided.

[WEA-2G3G-RQMT-0280] Instead of sending FIPS geocode values to the CBC, the CMSP Gateway shall only send Specific Area Message Encoding (SAME) geocode values to the CBC.

a. [WEA-2G3G-RQMT-0290] If the CMSP Gateway receives both the CMAC_cmas_geocode element and the CMAC_cap_geocode element with a SAME geocode value, the CMSP Gateway shall only send the SAME geocode value to the CBC.

b. [WEA-2G3G-RQMT-0300] If the CMSP Gateway receives only the CMAC_cmas_geocode element, the CMSP Gateway shall convert the FIPS value of the CMAC_cmas_geocode to a SAME geocode value by appending a leading zero to the FIPS value and shall send only the generated SAME geocode value to the CBC.

[WEA-2G3G-RQMT-0310] The CMSP Gateway shall maintain the correlation between the English alert message and the equivalent Spanish alert message.

[WEA-2G3G-RQMT-0320] When a new alert message is received, the CMSP Gateway shall send requests to the CBC to broadcast the new English message and the new Spanish message, if Spanish message text was provided.

[WEA-2G3G-RQMT-0330] The CMSP Gateway shall send requests to the CBC for short (90 characters maximum) text messages for broadcasting on GSM and UMTS networks.

[WEA-2G3G-RQMT-0340] Upon the reception of a cancel alert message, the CMSP Gateway shall cancel the English alert message and the linked Spanish message, if present.

[WEA-2G3G-RQMT-0350] It is not an error condition for an updated English alert message to not have an equivalent updated Spanish alert message when the original English alert message had a linked Spanish alert message.

[WEA-2G3G-RQMT-0360] It is not an error condition for an updated English alert message to have an equivalent updated Spanish alert message when the original English alert message did not have a linked Spanish alert message.

4.2.1 Message Coding

The WEA alert messages that are received from the Federal Alert Gateway are UTF-8 encoded (per ATIS-0700037.v002 [Ref 8]).

[WEA-2G3G-RQMT-0400] The CMSP shall transmit the English and Spanish messages in the default GSM 7-bit alphabet to the mobile device.

[WEA-2G3G-RQMT-0410] UTF-8 characters that are not contained in the default GSM 7-bit alphabet may be represented by their closest approximation in the GSM 7-bit alphabet. The algorithm for the mapping of the characters in UTF-8 to characters in the GSM 7-bit alphabet is vendor implementation specific and is beyond the scope of this Standard.

4.2.2 URL Coding

If the Alert Originators include URLs with characters which are not supported by the GSM 7-bit alphabet, these unsupported characters will be removed or replaced which could result in the URLs in the broadcast alert messages not being valid.

[WEA-2G3G-RQMT-0500] To avoid this situation, the Alert Originators should not use the characters "{", "}", "|", "\", "^", "~", "[", "]", and "`" in their embedded URLs. See IETF RFC 3986 [Ref 22] regarding unsafe characters.

4.3 Mobile Device Requirements

This clause provides the mobile device requirements for the support of WEA via GSM/UMTS CBS. The requirements for the mobile device behavior upon the receipt of the WEA alert message are defined in ATIS-0700036.v002, *Wireless Emergency Alert (WEA) 3.0 Mobile Device Behavior (MDB) Specification* [Ref 9].

[WEA-2G3G-RQMT-0600] The mobile device shall monitor associated channel or channels for WEA Alerts.

[WEA-2G3G-RQMT-0610] Distribution of the WEA alert messages to the CMSP's subscribers shall be unidirectional from the CMSP network to the mobile device of the subscriber. There shall not be any acknowledgement or confirmation of receipt from the mobile device.

NOTE: The FCC does not require that legacy mobile devices be supported. WEA functionality is needed on future mobile devices.

4.4 CBC to BSC/RNC Interface

This clause defines the requirements for the interface between the CBC and the BSC/RNC.

[WEA-2G3G-RQMT-0700] CBCs shall be able to interface to all BSCs/RNCs deployed in the CMSP network.

[WEA-2G3G-RQMT-0710] The CBC to BSC interface shall follow the existing primitives in the 3GPP TS 23.041 [Ref 2] specification.

[WEA-2G3G-RQMT-0720] The CBC to RNC interface shall follow the existing primitives in the 3GPP TS 25.419 [Ref 3] specification.

4.5 Lawful Interception Requirements

There are no lawful interception requirements for WEA, as all WEA messages are generated by the government and are disseminated to the public. WEA messages are not specific to a target or subject of an interception. No new or existing network Intercept Access Points are expected to intercept WEA messages.

4.6 Discontinuous Reception Requirements

[WEA-2G3G-RQMT-0800] Support of the Cell Broadcast Service Discontinuous Reception (DRX) shall be mandatory for both the network and mobile devices for both GSM and UMTS. In 3GPP TS 23.041 [Ref 2], DRX is optional in GSM and mandatory in the RNC for UMTS; in order to minimize the impact battery life, both GSM and UMTS networks and mobile devices that support WEA shall be required to support the DRX mode.

5 Functional Architecture and Interfaces

Reference Points “D” & “E” are defined in Figure 3.1.

The WEA Reference Point “D” maps to interface 1 for both GSM and UMTS (see 3GPP TS 23.041 [Ref 2] and ATIS-0700008.v003 [Ref 16]).

The WEA Reference Point “E” maps to interface 4 for GSM and Uu for UMTS (see 3GPP TS 23.041 [Ref 2]).

Interface 2 and interface 3 are defined in 3GPP TS 23.041 [Ref 2] and are further explained in ATIS-0700007, *Implementation Guidelines and Best Practices for GSM/UMTS Cell Broadcast Service Specification* [Ref 4].

The GSM cell broadcast network architecture for support of WEA is as follows:

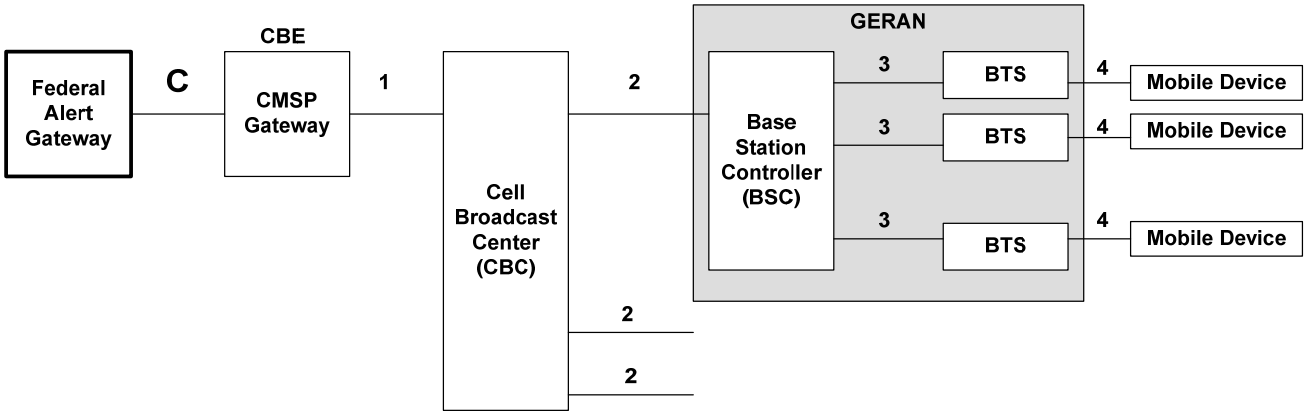

Figure 5.1: GSM Cell Broadcast Network Architecture for WEA

Similarly, the UMTS cell broadcast network architecture for support of CMAS is as follows:

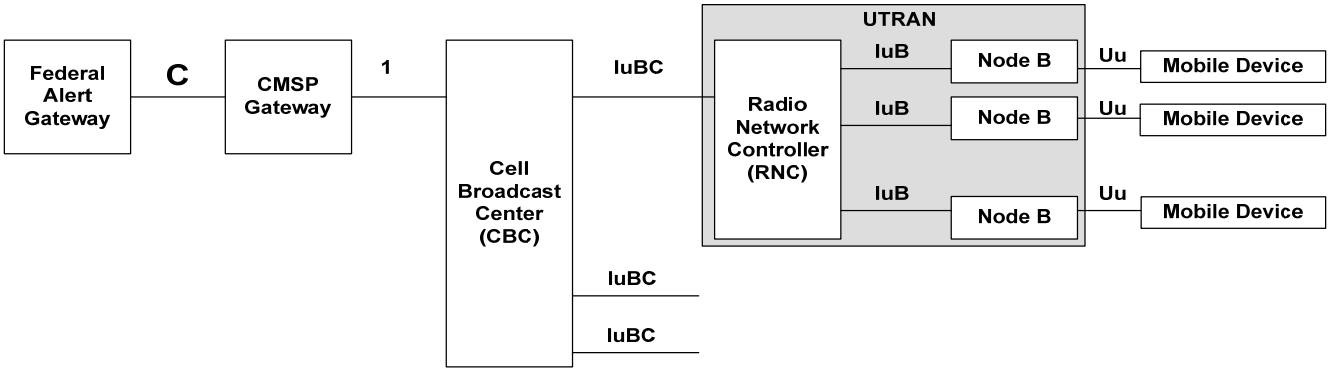

Figure 5.2: UMTS Cell Broadcast Network Architecture for WEA

5.1 CBC to BSC Interface

CBCs need to interface to all BSCs deployed in the CMSP network using the primitives defined in 3GPP TS 23.041 [Ref 2] and the call flows in ATIS-0700007 [Ref 4]. In addition, any vendor specific CBC to BSC protocol descriptions not following these specifications could be required by CMSPs, test equipment vendors, and Operations, Administration, and Maintenance (OA&M) equipment vendors to verify interoperability.

NOTE: 3GPP TS 48.049, Base Station Controller – Cell Broadcast Centre (BSC-CBC) interface specification; Cell Broadcast Service Protocol (CBSP) [Ref 19] could be used as the protocol between the CBC and BSC.

5.2 CBC to RNC Interface

For the support of Cell Broadcast via UMTS, 3GPP has defined a mandatory protocol between the CBC and RNC in 3GPP TS 25.419 [Ref 3].

5.3 CMSP Gateway to CBC Interface

The interface between the CMSP Gateway and the CBC is defined in ATIS-0700008.v003 [Ref 16].

6 WEA Call Flows

This clause provides call flows for the WEA functionality. These call flows assume that the delivery technology will be Cell Broadcast Service as defined in 3GPP TS 23.041 [Ref 2]. Example call flows for WEA application using GSM/UMTS Cell Broadcast Service are provided in ATIS-0700007 [Ref 4].

The CMSP Gateway is a Cell Broadcast Entity (CBE) and the interface to the CBC is specified in ATIS-0700008.v003 [Ref 16].

WEA does not modify the Cell Broadcast functionality as defined in 3GPP TS 23.041 and other referenced 3GPP specifications.

The following WEA call flows are defined in this clause:

- New WEA alert message call flow.
- Updated WEA alert message call flow.
- Cancelled WEA alert message call flow.
- Invalid WEA alert message call flow.

6.1 New WEA Alert Message Call Flow

The following is the call flow for a new WEA Alert Message:

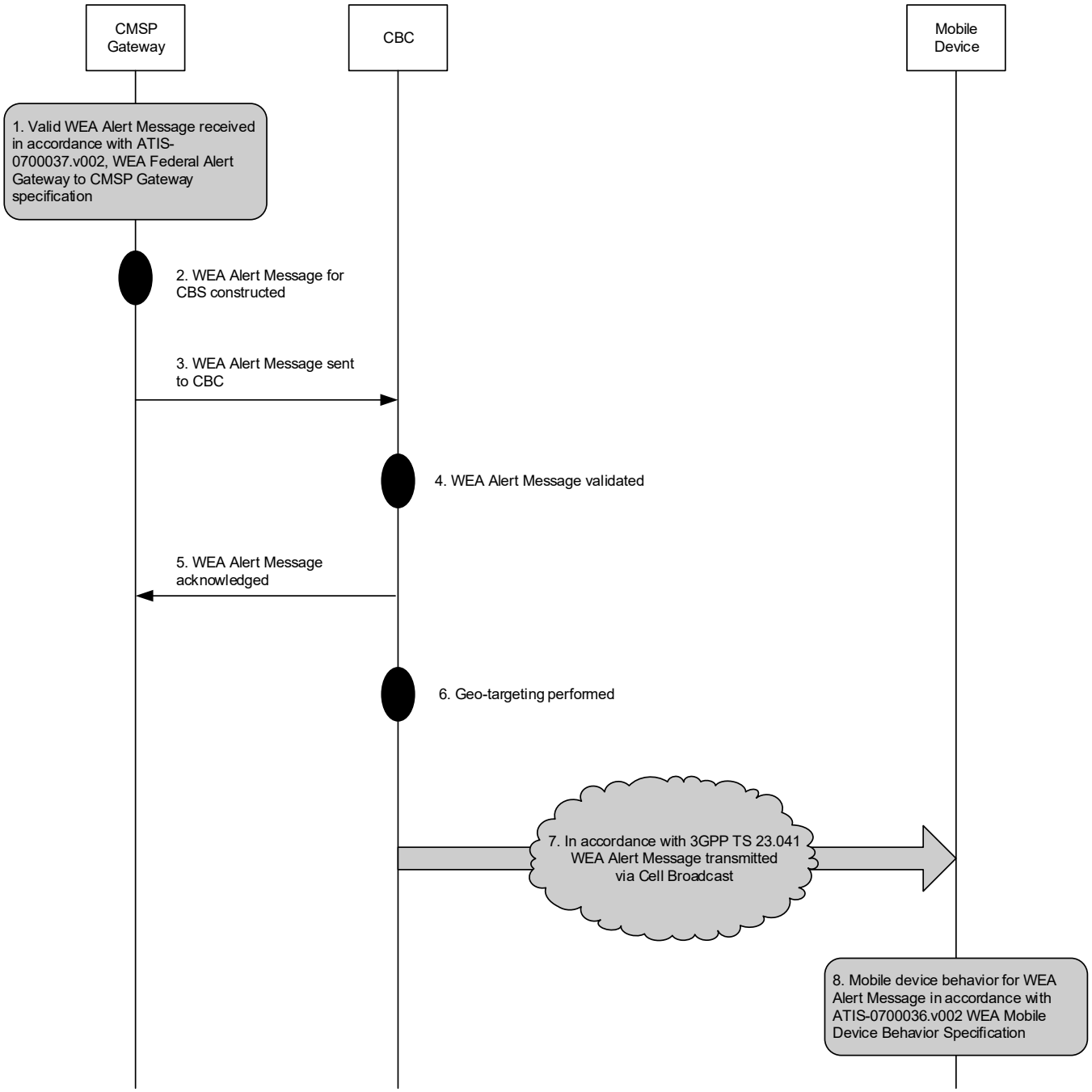

Figure 6.1: New WEA Alert Call Flow

1. A valid WEA Alert Message is received in accordance with ATIS-0700037.v002 [Ref 8].
2. The CMSP Gateway constructs the English language WEA Alert Message for CBS and, if Spanish text is received from the Federal Alert Gateway, the Spanish language WEA Alert Message for CBS.

Steps 3 through 8 are repeated for the English language WEA message and for the Spanish language WEA message. All of the resulting WEA Alert Messages for CBS are linked to the WEA Alert Message received in step 1 by the CMSP Gateway.

3. The CMSP Gateway sends the WEA Alert Message to the CBC as defined in ATIS-0700008.v003 [Ref 16].
4. The CBC validates the received WEA Alert Message.

5. The CBC sends an acknowledgement to the CMSP Gateway for the WEA Alert Message as defined in ATIS-0700008.v003 [Ref 16].
6. The CBC performs geo-targeting to calculate the associated set of cell sites for the received WEA Alert Message.

   NOTE: If the geo-targeting indicates that no cell sites serviced by this CBC are within the indicated WEA alert area, no further processing of this new WEA alert message is required for the CBC.
7. The WEA Alert Message for CBS is transmitted via Cell Broadcast in accordance with 3GPP TS 23.041 [Ref 2].
8. The mobile device behavior for the transmitted WEA Alert Message for CBS is in accordance with ATIS-0700036.v002 [Ref 9].

6.2 Updated WEA Alert Message Call Flow

The following is the call flow for an updated WEA Alert Message:

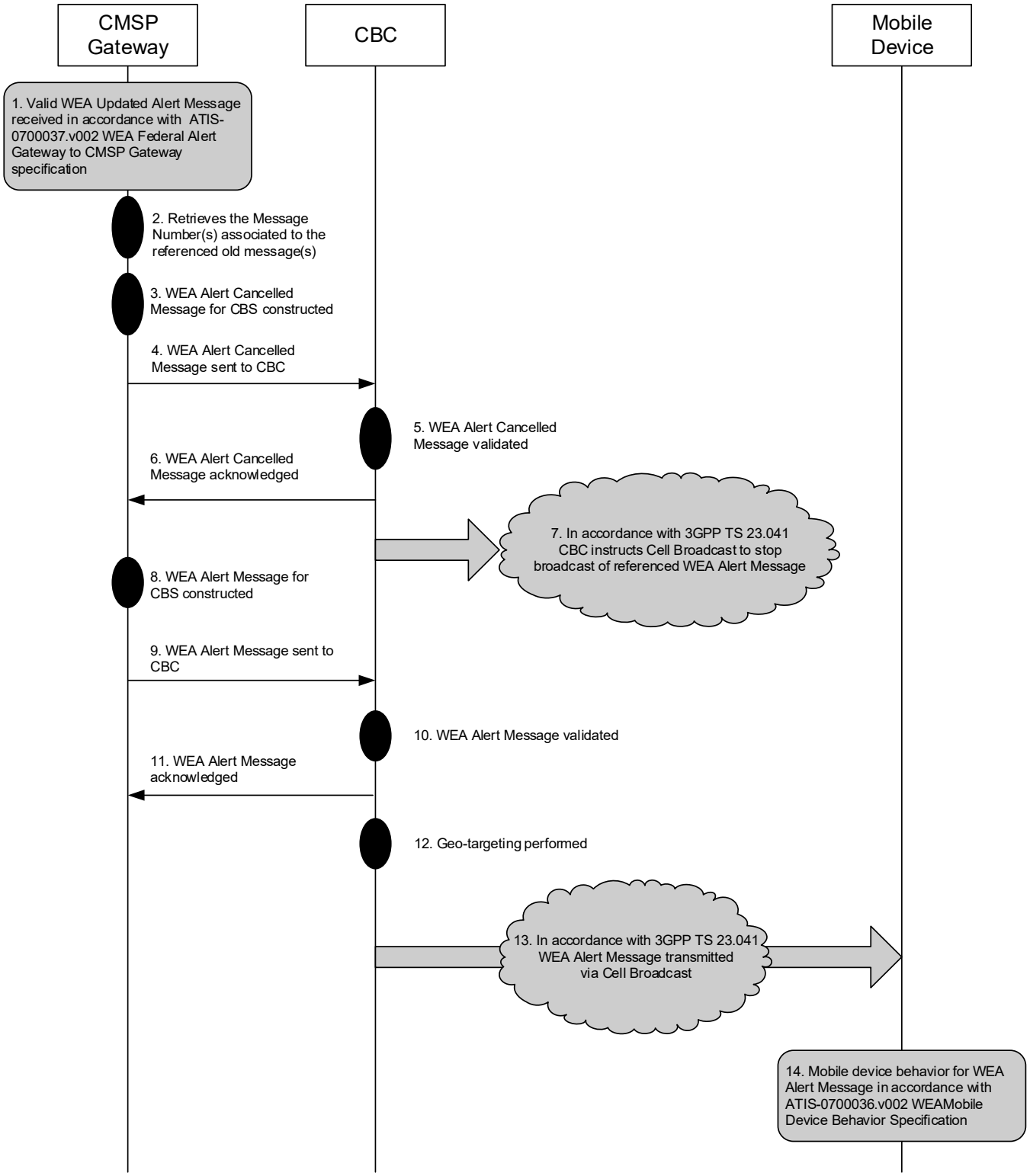

Figure 6.2: Updated WEA Alert Message Call Flow

1. A valid WEA Updated Alert Message is received in accordance with ATIS-0700037.v002 [Ref 8].
2. The CMSP Gateway retrieves the Message Numbers associated to the old referenced messages that have to be updated. The CMSP Gateway handles the Update Request in two stages, first by cancelling the old messages, and then initiating the new messages.

NOTE: Steps 3 through 7 do not apply if the CMSP Gateway is unable to retrieve the Message Numbers of the old referenced message. This condition may occur if the referenced message did not qualify to be broadcast as an WEA message or if the referenced message is no longer being broadcast.

3. The CMSP Gateway constructs the WEA Alert Cancelled Message for CBS for the English language message and for the Spanish language message if the linked Spanish message broadcast is ongoing.

Steps 4 through 7 are repeated for the English language WEA message and for the Spanish language WEA message if associated Spanish message broadcast is ongoing.

4. The CMSP Gateway sends the WEA Alert Cancelled Message to the CBC as defined in ATIS-0700008.v003 [Ref 16].
5. The CBC validates the received WEA Alert Cancelled Message.
6. The CBC sends an acknowledgement to the CMSP Gateway for the WEA Alert Cancelled Message as defined in ATIS-0700008.v003 [Ref 16].
7. In accordance with 3GPP TS 23.041 [Ref 2], Cell Broadcast is instructed to stop the broadcast of the WEA Alert Message referenced in the received WEA Alert Cancelled Message for CBS.

   NOTE: Step 6 and step 7 may occur in any order.

Steps 8 through 14 are repeated for the English language message and also for the Spanish language message if associated Spanish message text was provided.

8. The CMSP Gateway constructs the WEA Alert Message for CBS with the new message.
9. The CMSP Gateway sends the WEA Alert Message to the CBC as defined in ATIS-0700008.v003 [Ref 16].
10. The CBC validates the received WEA Alert Message.
11. The CBC sends an acknowledgement to the CMSP Gateway for the WEA Alert Message as defined in ATIS-0700008.v003 [Ref 16].
12. The CBC performs geo-targeting to calculate the associated set of cell sites for the received WEA Alert Message.

    NOTE: If the geo-targeting indicates that no cell sites serviced by this CBC are within the indicated WEA alert area, no further processing of this new WEA alert message is required for the CBC.
13. The WEA Alert Message for CBS is transmitted via Cell Broadcast in accordance with 3GPP TS 23.041 [Ref 2].
14. The mobile device behavior for the transmitted WEA Alert Message for CBS is in accordance with ATIS-0700036.v002 [Ref 9].

6.3 Cancelled WEA Alert Message Call Flow

The following is the call flow for a cancelled WEA Alert Message:

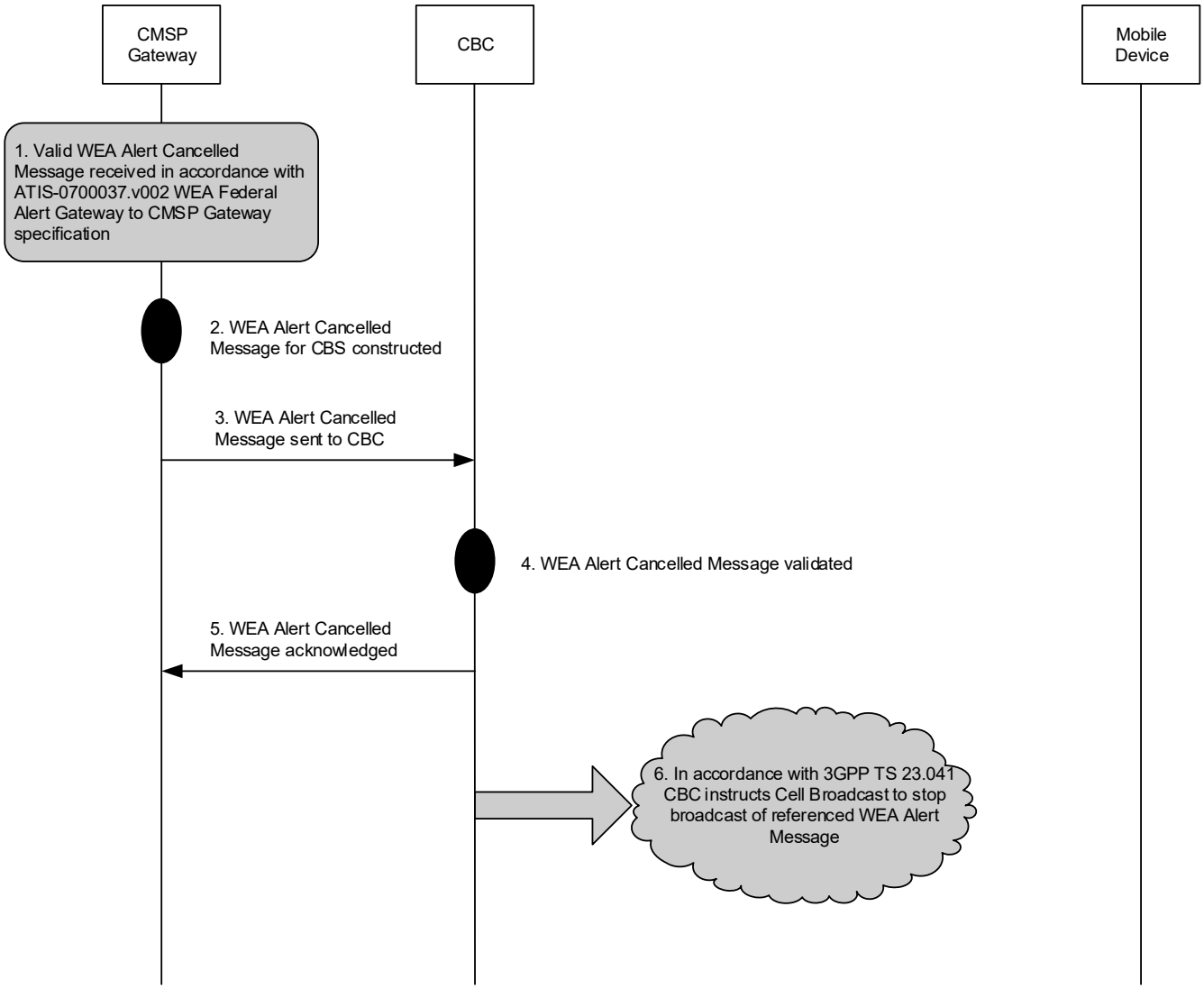

Figure 6.3: Cancelled WEA Alert Message Call Flow

1. A valid WEA Alert Cancelled Message is received in accordance with ATIS-0700037.v002 [Ref 8].
2. The CMSP Gateway constructs the WEA Alert Cancelled Message for CBS for the English language message and for the Spanish language message, if associated Spanish message broadcast is ongoing.

Steps 3 through 6 are repeated for the English language WEA message and for the Spanish language WEA message if a Spanish language WEA is being broadcast.

3. The CMSP Gateway sends the WEA Alert Cancelled Message to the CBC as defined in ATIS-0700008.v003 [Ref 16].
4. The CBC validates the received WEA Alert Cancelled Message.
5. The CBC sends an acknowledgement to the CMSP Gateway for the WEA Cancellation Alert Message as defined in ATIS-0700008.v003 [Ref 16].
6. In accordance with 3GPP TS 23.041 [Ref 2], Cell Broadcast is instructed to stop the broadcast of the WEA Alert Message referenced in the received WEA Alert cancelled Message for CBS.

6.4 Invalid WEA Alert Message Call Flow

The following is the call flow for an invalid WEA Alert Message:

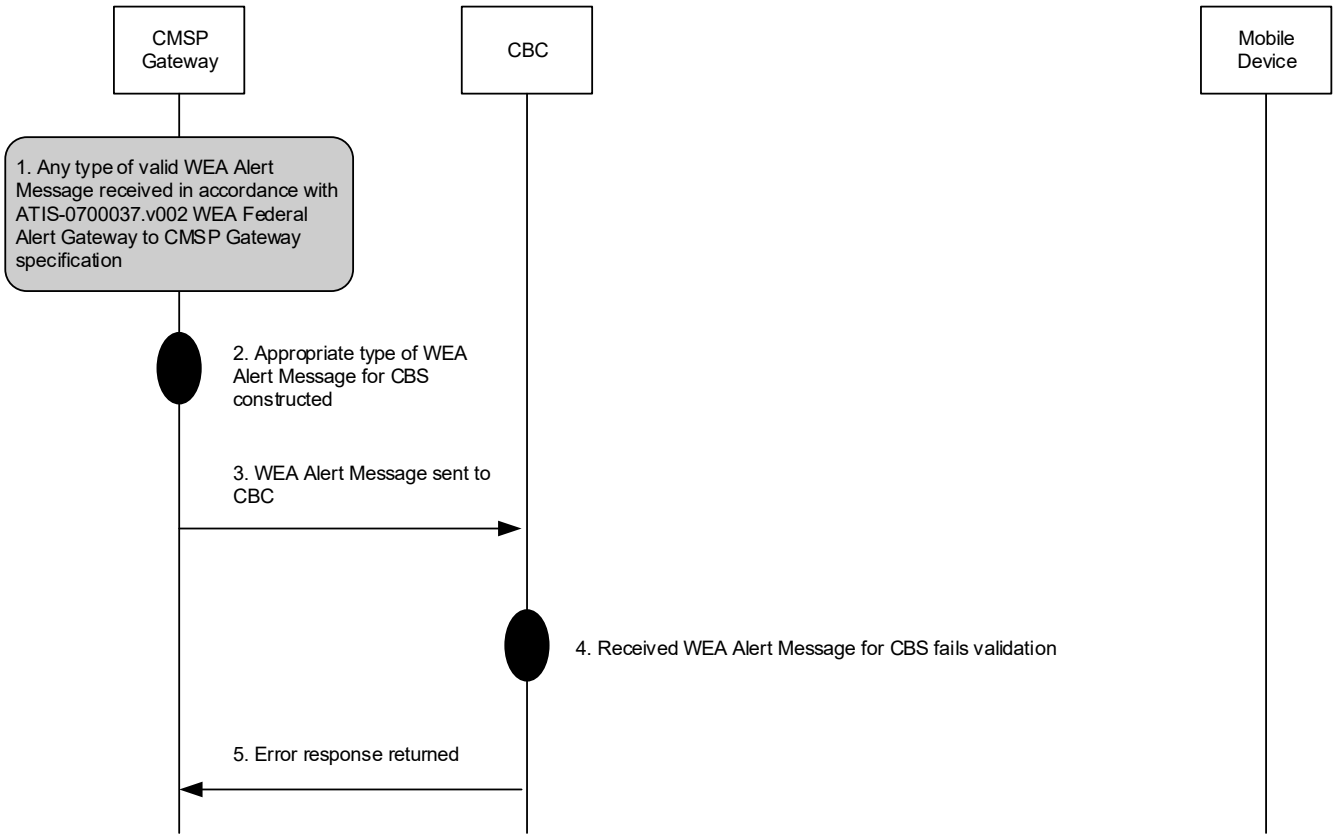

Figure 6.4: Invalid WEA Alert Message Call Flow

1. Any type of valid WEA Alert Message is received in accordance with ATIS-0700037.v002 [Ref 8].
2. The CMSP Gateway constructs the appropriate type of WEA Alert Message for CBS.
3. The CMSP Gateway sends the constructed WEA Alert Message to the CBC as defined in ATIS-0700008.v003 [Ref 16].
4. The CBC validates the received WEA Alert Message and the received message fails validation.
5. The CBC returns an error response to the CMSP Gateway as defined in ATIS-0700008.v003 [Ref 16].

6.5 Transmission Control Message Call Flows

The CBC may request message traffic from the CBE be ceased or resumed based upon internal error processing or due to a maintenance condition on the CBC. This clause provides the following transmission control call flows:

- Cease transmissions call flow.
- Resume transmissions call flow.

The relationship and interaction of Transmission Control Messages on the CBE to CBC interface with the Transmission Control Messages on the Reference Point “C” Interface of ATIS-0700037.v002 [Ref 8] is beyond the scope of this Standard.

6.5.1 Cease Transmissions Call Flow

The CBC may request message traffic from the CBE be ceased based upon internal error processing or due to a maintenance condition on the CBC.

The following figure with its descriptions of the associated call flow steps defines the call flow for a Transmission Control - Cease Message sent from the CBC to the CMSP Gateway over the CBE to CBC Interface:

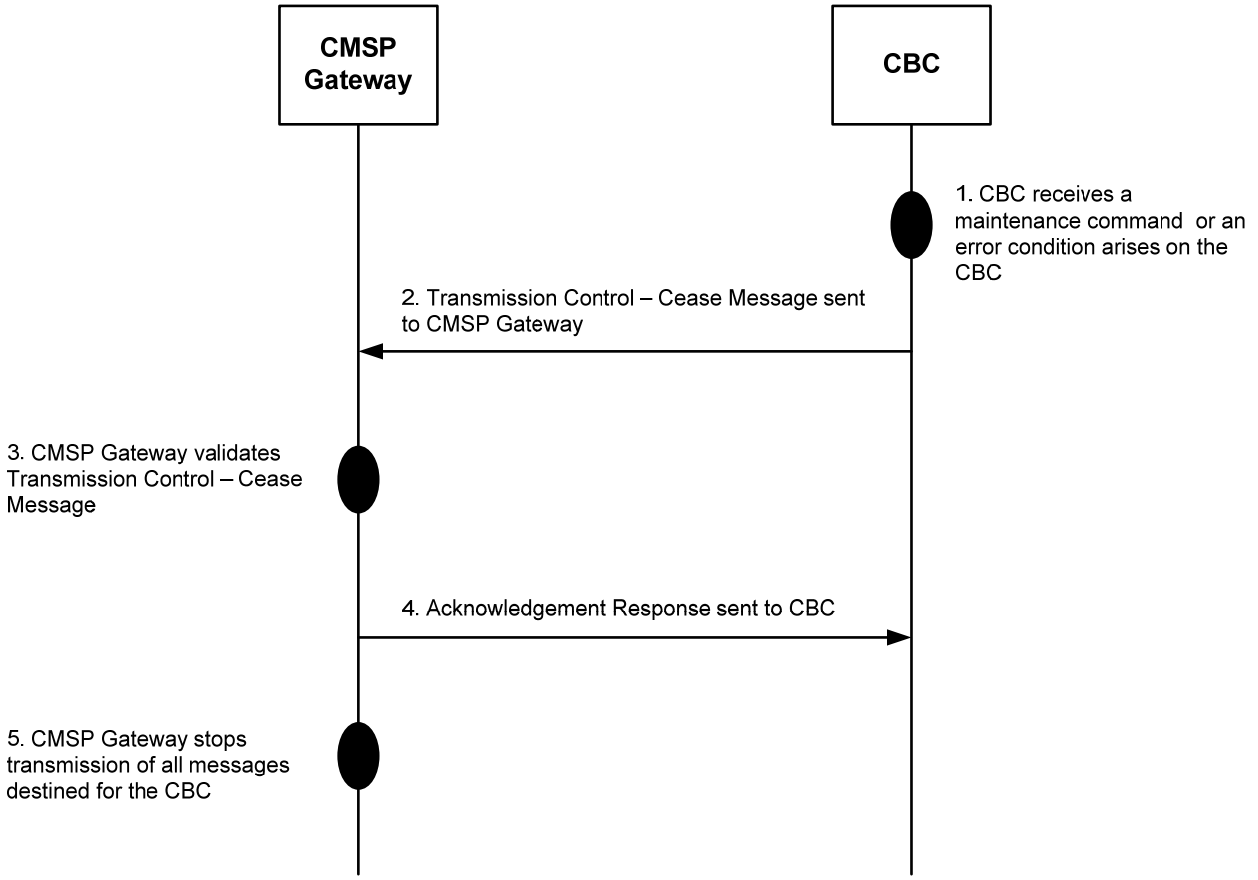

Figure 6.5: Cease Transmissions Call Flow

1. The CBC receives a maintenance command to request the CMSP Gateway stop transmissions of all messages destined for the CBC or an error condition arises, which prevents the CBC from processing any further messages from the CMSP Gateway.
2. The CBC sends the Transmission Control - Cease Message to the CMSP Gateway via the CBE to CBC Interface.
3. The CMSP Gateway validates the received Transmission Control – Cease Message from the CBC.
4. The CMSP Gateway sends an Acknowledge Response back to the CBC.

   NOTE: The CBC may choose to ignore the acknowledgement response.
5. The CMSP Gateway stops transmissions of all messages destined for the CBC.

6.5.2 Resume Transmissions Call Flow

Once the maintenance or error condition that triggered the stop of message transmission over the CBE to CBC Interface is cleared, the CBC informs the CMSP Gateway that transmission of messages may resume. The following figure with its descriptions of the associated call flow steps defines the call flow for a Transmission Control – Resume Message sent from the CBC to the CMSP Gateway over the CBE to CBC Interface:

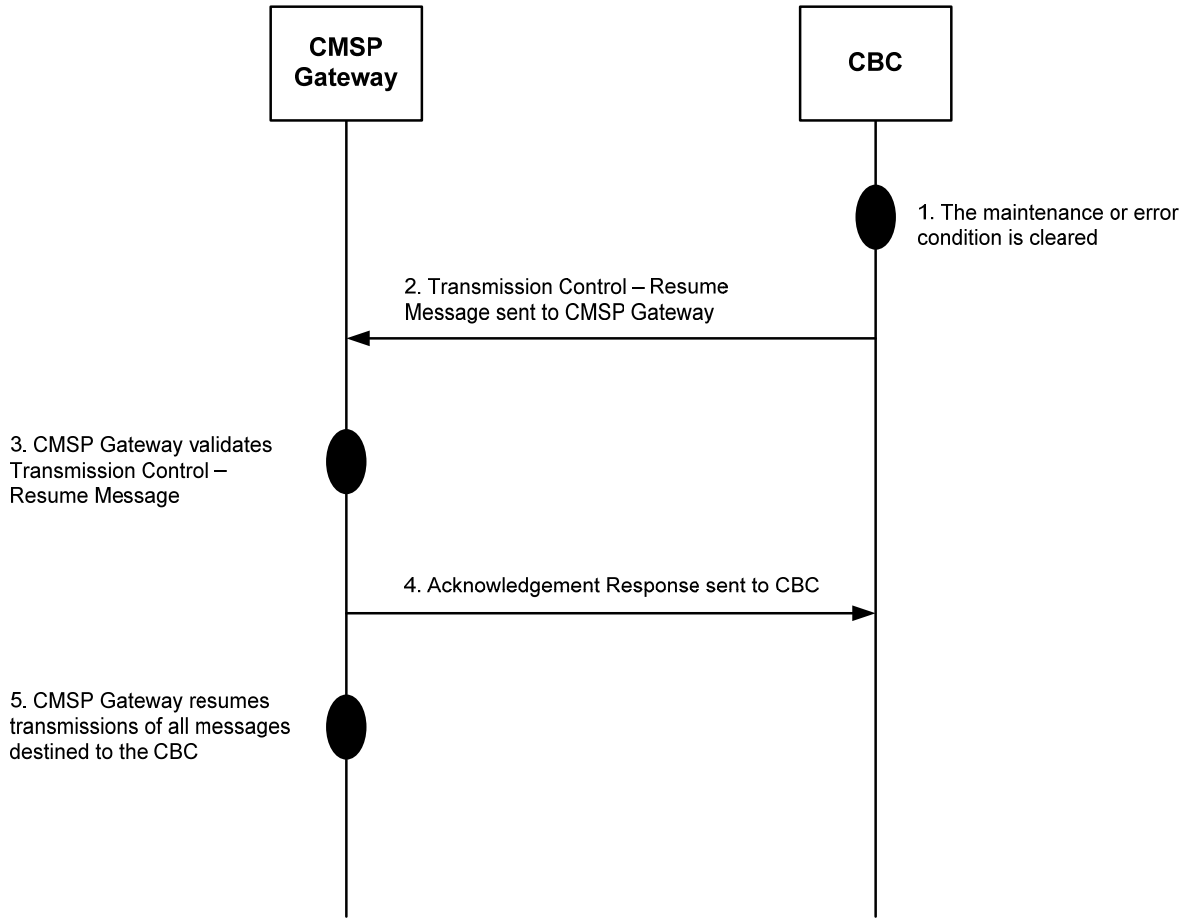

Figure 6.6: Resume Transmissions Call Flow

1. The maintenance or error condition that triggered the stop of message transmission over the CBE to CBC Interface is cleared.
2. The CBC sends the Transmission Control – Resume Message to the CMSP Gateway via the CBE to CBC Interface.
3. The CMSP Gateway validates the received Transmission Control – Resume Message from the CBC.
4. The CMSP Gateway sends an Acknowledge Response back to the CBC.
5. The CSMP Gateway may resume transmission of messages destined to the CBC.

7 Cell Broadcast Service Messages for WEA Application

This clause describes the use of Cell Broadcast messages to support the WEA alert messages as follows:

- Description of the mapping of the WEA message structure to the Cell Broadcast message structure.
- Description of the Cell Broadcast parameters which have specific application to the WEA alert messages.

7.1 WEA Interfaces

As indicated in clause 6, the interface between the CMSP infrastructure and the mobile devices is referred to as Reference Point “E” in the WEA functional architecture. Reference point “E” is a logical abstract interface (i.e., it is not a physical interface), and in the GSM/UMTS architecture can be thought of as corresponding to the Base Transceiver Station (BTS)/Node B to mobile device interface for the delivery of WEA messages via the Cell Broadcast Service (interface 4 in the GSM architecture of Figure 5.1 and the Uu in the UMTS architecture of Figure 5.2).

The interface between the CMSP Gateway and the CBC is referred to as Reference Point “D”. The data elements that are sent between the CMSP Gateway and the CBC over Reference Point “D” are CBE message elements and are referred to as Cell Broadcast Entity Message (CBEM) elements. This interface is specified in ATIS-0700008.v003 [Ref 16].

The following diagram illustrates how the CMSP infrastructure delivers WEA alert messages to the mobile devices through the Cell Broadcast Service:

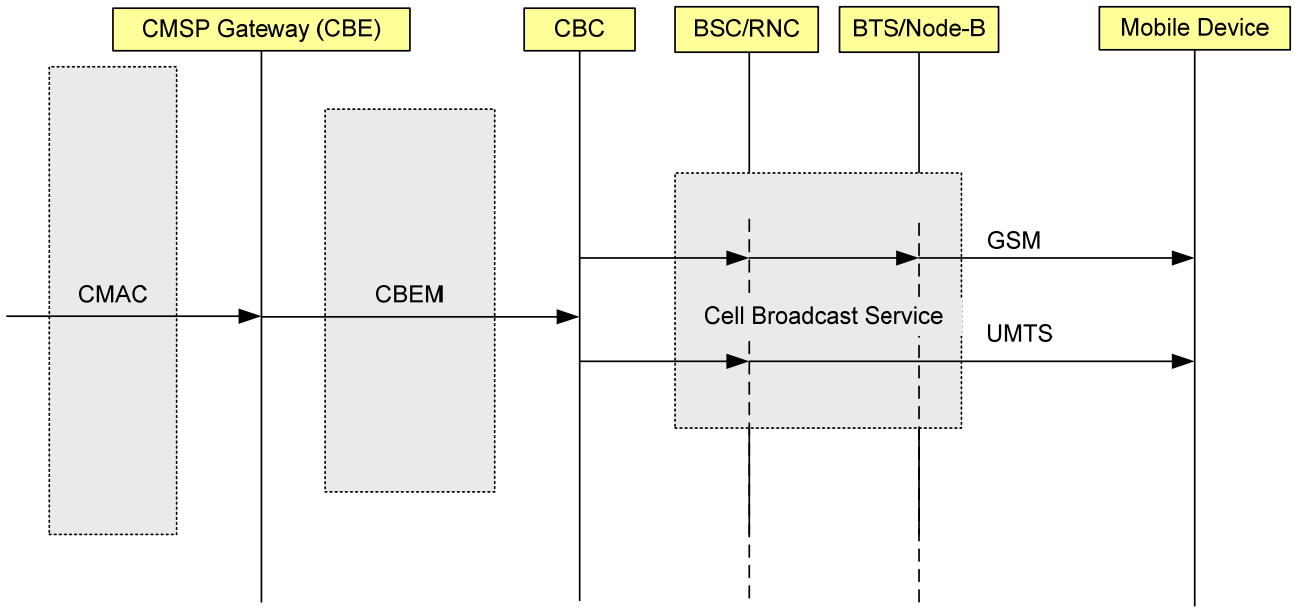

Figure 7.1: WEA Message Relationship

Within the WEA functional architecture, the CMSP Gateway converts the Commercial Mobile Alert for C Interface (CMAC) messages received over Reference Point “C” from the Federal Alert Gateway, per ATIS-0700037.v002 [Ref 8], to the CBEM messages before sending the alert message to the CBC, per ATIS-0700008.v003 [Ref 16]. The mapping of CMAC elements to CBEM elements is governed by the WEA data that is to be delivered to the mobile devices via the GSM/UMTS Cell Broadcast Service; this mapping is described in this Standard. This Standard also illustrates the mapping of the CBEM elements and the Cell Broadcast Service elements.

7.2 Cell Broadcast Service & WEA

The Cell Broadcast messages are delivered based upon the CBS capabilities as specified in 3GPP TS 25.324 [Ref 15], 3GPP TS 25.419 [Ref 3], 3GPP TS 25.925 [Ref 17], and 3GPP TS 44.012 [Ref 18]. This standard utilizes these messages to broadcast WEA alert messages. The following sub-clauses provide an overview of the CBS message structures for GSM and UMTS.

This standard specifies how the parameters of the CBS WRITE-REPLACE and KILL primitives are populated based upon the CBEM elements. The cell broadcast messages associated with the GSM and UMTS air interfaces are described in the relevant 3GPP specifications and in ATIS-0700007 [Ref 4].

7.2.1 WEA Cell Broadcast Message Structure for GSM

For GSM, the CBS message is sent using four consecutive Cell Broadcast Channel (CBCH) blocks, each having 22 octets of payload plus 1 octet of header. The 88 octets (4 times 22) have the following format:

- CBS Header: 6 octets
  - Serial Number: 2 octets
  - Message Id: 2 octets
  - Data Coding Scheme: 1 octet

- Page Parameter: 1 octet

- CBS Content: 82 octets
  - 79 octets of WEA alert text
  - 3 octets of padded text

7.2.2 WEA Cell Broadcast Message Structure for UMTS

For UMTS, the CBS message is sent using the Broadcast/Multicast Control (BMC) CBS message on consecutive Common Control Channel (CTCH) blocks. The number of CTCH blocks used depends on the number of octets to be sent and the other transmission rate, etc. The format of these messages is as follows:

- CBS Header: 6 octets
  - Message Type: 1 octet
  - Message Id: 2 octets
  - Serial Number: 2 octets
  - Data Coding Scheme: 1 octet

- CBS Content: N octets (where N <= 1246, but for this WEA application, N = 81).
  - Number of Pages: 1 octet ("1")
  - CBS Information Page 1 (82 octets maximum)
  - CBS Information Length 1 ("79")
  - CBS Information Page 2 (not used in WEA application)
  - CBS Information Length 2 (not used in WEA application)
    ::::::::::::
    ::::::::::::
  - CBS Information Page 15 (not used in WEA application)
  - CBS Information Length 15 (not used in WEA application)

7.3 Overview of WEA Element Mapping

The following table illustrates which CMAC elements are used to derive CBEM elements, CBS elements, and ultimately delivered to the mobile device. Note that only a small portion of the CMAC elements are ultimately delivered to the mobile device. Most CMAC elements are used by the network entities supporting the WEA and/or CBS service. The clauses that follow describe in detail the element mapping from the CMAC to CBEM and CBEM to CBS messages.

Table 7.1: Element Mapping from CMAC to CBEM to Mobile Device

CMAC Element	Mapped to CBEM?	Mapped to CBS?	Delivered to Mobile Device?
CMAC_area_description	No	No	No
CMAC_cap_alert_uri	No	No	No
CMAC_cap_geocode	Yes	Yes	No
CMAC_cap_identifier	No	No	No
CMAC_cap_sent_date_time	No	No	No
CMAC_category	No	No	No
CMAC_certainty	Yes (see Note 1)	Yes (see Note 1)	Yes (see Note 1)
CMAC_circle	Yes	Yes	No
CMAC_cmas_geocode	Yes	Yes	No

CMAC Element	Mapped to CBEM?	Mapped to CBS?	Delivered to Mobile Device?
CMAC_Digital_Signature	No	No	No
CMAC_expires_date_time	Yes (see Note 2)	Yes (see Note 2)	No
CMAC_gnis	No	No	No
CMAC_message_number	Yes	Yes	No
CMAC_message_type	Yes	Yes	No
CMAC_note	No	No	No
CMAC_polygon	Yes	Yes	No
CMAC_protocol_version	No	No	No
CMAC_referenced_message_cap_identifier	No	No	No
CMAC_referenced_message_number	Yes	Yes	No
CMAC_response_code	No	No	No
CMAC_response_type	No	No	No
CMAC_sender	No	No	No
CMAC_sender_name	No	No	No
CMAC_sending_gateway_id	No	No	No
CMAC_sent_date_time	No	No	No
CMAC_severity	Yes (see Note 1)	Yes (see Note 1)	Yes (see Note 1)
CMAC_special_handling	Yes (see Note 1)	Yes (see Note 1)	Yes (see Note 1)
CMAC_status	No	No	No
CMAC_short_text_alert_message	Yes	Yes	Yes
CMAC_short_text_alert_message_length	No	No	Yes (see Note 3)
CMAC_long_text_alert_message	Yes (see Note 5)	Yes	Yes
CMAC_long_text_alert_message_length	No (see Note 5)	No	Yes (see Note 3)
CMAC_text_language	Yes	Yes	Yes (see Note 1, Note 4)
CMAC_urgency	Yes (see Note 1)	Yes (see Note 1)	Yes (see Note 1)

NOTE 1: The CMAC_special_handling, CMAC_severity, CMAC_certainty, CMAC_urgency, and CMAC_text_language elements are used to derive the CBS Message Identifier element. See 8.5.6, *Message Identifier*.

NOTE 2: The CMAC_expires_date_time element is used to derive the CBS number of broadcasts requested. See 8.5.7, *Number of Broadcasts Requests*.

NOTE 3: The message length is calculated by the CBC and is contained within the WRITE-REPLACE CBS Message Information Length1 parameter.

NOTE 4: The text language is contained in the WRITE-REPLACE Data Coding Scheme parameter. See 8.5.5, *Data Coding Scheme*.

NOTE 5: The CMAC_long_text_alert_message and the CMAC_long_text_alert_message_length elements are not used for GSM/UMTS networks.

7.4 Mapping of CBEM Elements from CMAC Elements

The following table illustrates how the CBEM elements defined in ATIS-0700008.v003 [Ref 16] are derived from the CMAC elements of Federal Alert Gateway to CMSP Gateway interface:

Table 7.2: Mapping of CBEM Elements from CMAC Elements

CBEM Element	CMAC Element
CBEM_protocol_version	N/A Specific to the CMSP Gateway to CBC interface.
CBEM_message_number	Generated by the CMSP Gateway using the following: CMAC_message_number CMAC_cap_identifier
CBEM_referenced_message_number	Generated by the CMSP Gateway using the following: CMAC_referenced_message_number CMAC_referenced_message_cap_identifier
CBEM_sender_id	N/A Specific to the CMSP Gateway to CBC interface.
CBEM_message_type	N/A Specific to the CMSP Gateway to CBC interface, but the CMSP Gateway may use the CMAC_message_type to generate this element.
CBEM_response_code	N/A Specific to the CMSP Gateway to CBC interface.
CBEM_response_description	N/A Specific to the CMSP Gateway to CBC interface.
CBEM_CBS_message_id	Generated by the CMSP Gateway using the following: CMAC_special_handling CMAC_severity CMAC_urgency CMAC_certainty CMAC_text_language
CBEM_CBS_serial_number	N/A This element is not used in GSM and UMTS networks.
CBEM_operator_info	N/A The content, format, and structure of this element is out of scope of this Standard.
CBEM_data_coding_scheme	Set to “GSM_7_Bit_Coding”.
CBEM_language	Generated by the CMSP Gateway using the following: CMAC_text_language
CBEM_CBS_broadcast_text	Generated by the CMSP Gateway using the following: CMAC_short_text_alert_message_length CMAC_short_text_alert_message
CBEM_network	Generated by the CMSP Gateway and shall have one of the following values for broadcasting on GSM or UMTS networks: "GSM" "UMTS"
CBEM_repetition_period	N/A Generated by the CMSP Gateway.
CBEM_number_of_broadcasts_requested	Generated by the CMSP Gateway using the following: CMAC_expires_date_time
CBEM_displaymode	N/A Do not include this optional element in the CBEM message which implies default value of “0” for normal display mode.
CBEM_start_date_time	N/A Do not include this optional element in the CBEM message which implies an immediate start of the message broadcast.

CBEM Element	CMAC Element
CBEM_geocode_type	Generated by the CMSP Gateway using the following: CMAC_cmas_geocode CMAC_cap_geocode Mutual agreements between CMSP Gateway and CBC
CBEM_ geocode	Generated by the CMSP Gateway based upon the value of the CBEM_geocode_type element and the following: CMAC_cmas_geocode CMAC_cap_geocode Mutual agreements between CMSP Gateway and CBC
CBEM_polygon	CMAC_polygon
CBEM_circle	CMAC_circle
CBEM_warning_area_coordinates	N/A This element is not used in GSM and UMTS networks

7.5 Mapping of WEA Message to Cell Broadcast WRITE-REPLACE Indication

This clause describes the usage of the following GSM/UMTS CBS WRITE-REPLACE Indication parameters for the support of WEA alert message:

- Category
- CBS Message Information Page
- Cell List
- Channel Indicator
- Data Coding Scheme
- Message Identifier
- Number of Broadcast Requests
- Number of Pages
- Repetition Period
- Serial Number (New Serial Number)
- Service Area List

The following table illustrates how the above indicated WRITE-REPLACE parameters are derived from the CBEM elements:

Table 7.3: Mapping CBEM Elements to CBS WRITE-REPLACE Parameters

CBS WRITE-REPLACE Parameter	CBEM Element	Description
Message Identifier	CBEM_CBS_message_id	This identifies the source type of the CBS message.
New Serial Number	Generated by CBC and correlated to CBEM_message_number	This identifies a new CBS message.
Cell List/Service Area List	CBEM_geocode_type CBEM_geocode CBEM_polygon CBEM_circle	CBC derives the Cell List (GSM) or Service Area List (UMTS) from the geo-targeting information received from the CMSP Gateway. Multiple occurrences of geocode or multiple occurrences of polygon/circle may exist for one WEA message.

CBS WRITE-REPLACE Parameter	CBEM Element	Description
Channel Indicator	N/A	This is generated by the CBC and coded as “basic channel” for WEA applications.
Category	N/A	This is generated by the CBC and coded as “normal” for WEA applications.
Repetition Period	CBEM_repetition_period	This indicates the repetition period used to broadcast the WEA alert message.
Number of Broadcasts Requested	CBEM_number_of_broadcasts_requested	This indicates the number times the WEA alert message repeated.
Number of Pages	Calculated by CBC	This indicates the number of pages used to broadcast the WEA alert message. It is anticipated that only one page is required to broadcast the 90-character WEA alert message.
Data Coding Scheme	CBEM_language	Identifies the language and coding used in the WEA alert message; currently, the language is English or Spanish and 7-bit coding is used.
CBS Information Page 1	CBEM_CBS_broadcast_text	This identifies the actual contents of the WEA alert text.
CBS Information Length 1	Calculated by CBC	This identifies the length of the CBS Information page 1; with 90 characters, the length will be 79.

7.5.1 Category

The optional Cell Broadcast Category parameter (as defined in 3GPP TS 23.041 [Ref 2]) is not required for WEA alert messages. Since the category is omitted, the default category implied is "Normal" message.

7.5.2 CBS Message Information Page

The CBS-Message-Information-Page1 will contain the WEA Displayable Text which is the actual alert message that will be displayed on the mobile device.

> [WEA-2G3G-RQMT-1000] Cell broadcast shall support the text profile for WEA messages. The text profile specifies the maximum WEA Displayable Text to be 90 characters for an English or Spanish language WEA alert message encoded with GSM 7-bit encoding [Ref 10] provided by the CMSP Gateway. Languages other than English and Spanish – or coding other than GSM 7-bit coding – may result in a change to the maximum number of characters supported.

The WEA Displayable Text on the C interface is provided in UTF-8 format [Ref 11], which is capable of supporting text in English, Spanish, and other languages. It is the responsibility of the CBC to translate to the GSM 7-bit encoding for English or Spanish, or to other appropriate coding schemes for other languages.

> [WEA-2G3G-RQMT-1010] The Number-of-Pages element shall be “1” for a standard 90-character or less Commercial Mobile Alert Message (CMAM). [WEA-2G3G-RQMT-1020] CBS-Message-Information-Length “1” shall contain the number of octets of the WEA displayable text information contained in CBS-Message-Information-Page1.

The maximum 90-character WEA Displayable Text is mapped into CBS-Message-Information-Page1.

> [WEA-2G3G-RQMT-1030] Optionally, a CMSP may choose to provide additional displayable information beyond the 90-character CMAM. This optional additional displayable information is mapped into CBS-Message-Information-Page2 to CBS-Message-Information-Page15.

7.5.3 Cell List

This field provides a list of the cells that identify the target area for the broadcasting of a WEA alert message. Refer to 3GPP TS 23.041 [Ref 2] to understand the usage of this field in GSM.

7.5.4 Channel Indicator

[WEA-2G3G-RQMT-1040] For GSM, the Channel Indication parameter shall be set to indicate use of the "basic channel".

7.5.5 Data Coding Scheme

[WEA-2G3G-RQMT-1050] The language and character set for the WEA alert message shall be specified by the Cell Broadcast Data Coding Scheme parameter as specified in 3GPP TS 23.041 [Ref 2]. The encoding of the Data Coding Scheme parameter is defined in 3GPP TS 23.038 [Ref 10].

7.5.6 Message Identifier

The Message Identifier parameter identifies the source/type of a CBS message and is passed transparently from the CBC to the mobile device.

The assignment of Message Identifiers for WEA messages is specified in clause 8.5.2 of ATIS-0700010.v003, *Wireless Emergency Alert (WEA) via EPS Public Warning System Specification* [Ref 21], which is applicable for GSM, UMTS, and LTE networks.

7.5.7 Number of Broadcasts Requests

This field indicates the number of times a CBS message is to be repeated. Refer to 3GPP TS 23.041 [Ref 2] to understand the usage of this field in GSM and to 3GPP TS 25.419 [Ref 3] to understand the usage of this field in UMTS.

7.5.8 Number of Pages

This field identifies the number of CBS information pages used by a WEA alert message. In the initial WEA application, where the WEA alert messages are broadcast in the text-mode, the maximum number of text characters that apply to one WEA alert message is 90 characters coded in 7-bit format. One CBS Information Page (which can carry up to 82 octets) is able to carry all of the 90 characters (90*7 = 630 bits, 630/8 = 78.75 or 79 octets).

7.5.9 Repetition Period

This field is used by the CBC to instruct the BSCs/RNCs the repetition rate of the CBS message. Refer to 3GPP TS 23.041 [Ref 2] to understand the usage of this field in GSM and to 3GPP TS 25.419 [Ref 3] to understand the usage of this field in UMTS.

The repetition period is set by CMSP policies.

7.5.10 Serial Number (Old Serial Number and New Serial Number)

The CBS WRITE-REPLACE Indication has two Serial Number parameters defined: Old-Serial-Number and New-Serial-Number. The Serial Number parameter is used to uniquely identify CMAMs which have the same message identifier and are broadcast at the same time.

When a new CMAM or updated CMAM is broadcast, only a New-Serial-Number is required.

Refer to 3GPP TS 23.041 [Ref 2] to understand the usage of this field in GSM and to 3GPP TS 25.419 [Ref 3] to understand the usage of this field in UMTS.

7.5.11 Service Area List

This field provides a list of the service areas that identify the target area for the broadcasting of a WEA alert message. Refer to 3GPP TS 25.419 [Ref 3] to understand the usage of this field in UMTS.

7.6 Mapping of WEA Message to Cell Broadcast KILL Request/Indication

A CBS KILL Request/Indication is used during WEA Update and Cancel procedures (see 6.2, *Updated WEA Alert Message Call Flow,* and 6.3, *Cancelled WEA Alert Message Call Flow*). The following table illustrates how the KILL parameters are derived from the CBEM elements:

Table 7.4: Mapping of CBEM Elements to CBS KILL Parameters

CBS KILL Parameter	CBEM Element	Description
Message Identifier	CBEM_CBS_message_id	This identifies the source type of the CBS message.
Old Serial Number	Generated by CBC and correlated to CBEM_referenced_message_number	This identifies a CBS Message to be canceled.
Cell List/Service Area List	CBEM_geocode_type CBEM_geocode CBEM_polygon CBEM_circle	CBC uses stored geo-targeting information of the active broadcast. Multiple occurrences of geocode, or multiple occurrences of polygon/circle may exist for one WEA message.
Channel Indicator	N/A	This is generated by the CBC and coded as “basic channel” for WEA applications.