



**ATIS-0700025.v002**

ATIS Standard on -

**Wireless Emergency Alert (WEA) International Roaming  
Specification**



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*Published by*

**Alliance for Telecommunications Industry Solutions**  
**1200 G Street, NW, Suite 500**  
**Washington, DC 20005**

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# **Wireless Emergency Alert (WEA) International Roaming Specification**

**Alliance for Telecommunications Industry Solutions**

Approved February 17, 2020.

## **Abstract**

This standard provides the requirements for presentation of emergency alerts when U.S. and Canadian users are roaming throughout the U.S. and Canada, when U.S. and Canadian users roam elsewhere in the world where 3GPP PWS-based alerting is supported, and when international roamers from beyond North America roam into North America with a 3GPP PWS-capable mobile device. This Standard supports the requirements of the FCC Report & Order 16-127 and the FCC Order on Reconsideration 17-143.

## Foreword

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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:

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- M. Younge, WTSC Vice Chair (T-Mobile)
- P. Musgrove, WTSC SN Chair (AT&T)
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- P. Sanders, Technical Editor (one2many)

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

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## 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. This standard was originally developed based upon the CMAS terminology and CMAS was operational in April 2012. However, in February 2013, the FCC renamed Commercial Mobile Alert System (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-citizen emergency alerting to mobile devices capability 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.

## 1 Scope, Purpose, & Application

### 1.1 Scope

The scope of this standard is to identify the capabilities of mobile devices to support Wireless Emergency Alert (WEA) international roaming.

3GPP Public Warning System (PWS)-based systems for wireless emergency alerting have been and will continue to be deployed in various countries during the next few years. It is highly desirable that a user from one country be able to roam to another country and still have the ability to receive a wireless emergency alert in the roamed-to area. Operators in different countries will likely use differing applications in the User Equipment (UE) to support PWS in their home country. The use of differing UE applications to support PWS from one country to the next will provide a challenge to support international roaming for WEA (an instance of a PWS-based system in the United States) and Wireless Public Alerting Service (WPAS) (an instance of a PWS-based system in Canada). The broadcast of differing languages in PWS messages in different countries also provides a challenge to support international roaming for WEA. These challenges are addressed in this standard.

The Earthquake and Tsunami Warning System (ETWS) is outside the scope of this standard.

### 1.2 Purpose

The purpose of this WEA international roaming standard is to provide requirements to mobile device manufacturers that allow for emergency alerts to be delivered and displayed to U.S. and Canadian users roaming throughout the U.S. and Canada, to allow for emergency alerts to be delivered and displayed when U.S. and Canadian users roam elsewhere in the world where 3GPP PWS-based alerting solutions are implemented, and to allow for emergency alerts to be delivered and displayed to roamers with PWS-capable mobile devices from beyond North America when they roam into North America.

### 1.3 Application

This standard is applicable to mobile devices that support PWS as specified in 3GPP TS 22.268 [Ref 5].

## 2 References

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

### 2.1 Normative References

[Ref 1] 3GPP TS 23.038, *3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Alphabets and language-specific information*.<sup>1</sup>

[Ref 2] 3GPP TS 23.041, *3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Technical realization of Cell Broadcast Service (CBS)*.<sup>1</sup>

[Ref 3] J-STD-100, *Joint ATIS/TIA CMAS Mobile Device Behavior Specification*; January 30, 2009.

[Ref 4] ISO/IEC 10646:2017, *Information technology -- Universal Multiple-Octet Coded Character Set (UCS)*; 2017.<sup>2</sup>

[Ref 5] 3GPP TS 22.268, *3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Public Warning System (PWS) requirements*.<sup>1</sup>

[Ref 6] ATIS-0700021, *ATIS Canadian Wireless Public Alerting Service (WPAS) LTE Mobile Device Behavior Specification*, August 2015.<sup>3</sup>

[Ref 7] J-STD-100.a, *Supplement A to J-STD-100, Joint ATIS/TIA CMAS Mobile Device Behavior Specification*, December 2012. Error! Bookmark not defined.

[Ref 8] ATIS-0700036.v002, *Wireless Emergency Alert (WEA) 3.0 Mobile Device Behavior (MDB) Specification*, May 2, 2019.<sup>3</sup>

[Ref 9] ATIS-0700010.v003, *Wireless Emergency Alert (WEA) 3.0 via EPS Public Warning System Specification*.<sup>3</sup>

[Ref 10] IETF RFC 1738, *Uniform Resource Locators (URL)*.<sup>4</sup>

[Ref 11] FCC 18-4, *Federal Communications Commission Second Report and Order and Second Reconsideration*, January 30, 2018.<sup>5</sup>

### 2.2 Informative References

[Ref 100] ETSI TS 102 900, *European Public Warning System (EU-ALERT) using the Cell Broadcast Service (CBS)*.<sup>6</sup>

[Ref 101] TTA.KO-06.0263/R1, *Korean Public Alert System over LTE network (KPAS)*.<sup>7</sup>

## 3 Definitions, Acronyms, & Abbreviations

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

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<sup>1</sup> This document is available from the 3rd Generation Partnership Project (3GPP) at: < <http://www.3gpp.org/> >.

<sup>2</sup> This document is available from the International Organization for Standardization (ISO) at: < <http://www.iso.org> >.

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

<sup>4</sup> This document is available from the Internet Engineering Task Force (IETF) at: < <http://www.ietf.org> >.

<sup>5</sup> This document is available from the Federal Communications Commission at: < <http://www.fcc.gov/> >

<sup>6</sup> This document is available from The European Telecommunications Standards Institute (ETSI) at: < <http://www.etsi.org/> >.

<sup>7</sup> This document is available from Telecommunications Technology Association (TTA) at: < <http://www.tta.or.kr/> >.

### 3.1 Definitions

**Wireless Emergency Alert (WEA):** A continued provision of effective WEA Alert Messages while leveraging advancements in technology to improve WEA’s capabilities as defined up through the January 2018 FCC Second Report & Order and Second Order on Reconsideration, FCC 18-4 [Ref 11].

**Mandatory-to-display:** PWS messages with the message identifier values in the range 4370-to-4382, 4396 and 4398 are displayed regardless of language selection.

**Not-mandatory-to-display:** PWS messages received with the message identifier values in the range 4383-to-4395, 4397 and 4399 are displayed based on language selection.

### 3.2 Acronyms & Abbreviations

3GPP	3 <sup>rd</sup> Generation Partnership Project
ATIS	Alliance for Telecommunications Industry Solutions
CB	Cell Broadcast
CBS	Cell Broadcast Service
CCSA	China Communications Standards Association
CL-Alert	Chile Alert
CMAS	Commercial Mobile Alert System
ETSI	European Telecommunications Standards Institute
ETWS	Earthquake and Tsunami Warning System
EU-Alert	European Union Alert
GSM	Global System for Mobile communications
GSM7	GSM 7-bit Character Set
KPAS	Korea Public Alert System
LT-Alert	Lithuania Alert
LTE	Long Term Evolution
MID	Message Identifier
MMI	Man Machine Interface
NCC	National Communications Commission (of Taiwan)
NL-Alert	Netherlands Alert
PWS	Public Warning System
RAT	Radio Access Technology
RMT	Required Monthly Test
SIM	Subscriber Identity Module
TW-CMAS	Taiwan CMAS
UCS-2	Universal Character Set 2
UE	User Equipment
UMTS	Universal Mobile Telecommunication System
USIM	Universal Subscriber Identity Module
WEA	Wireless Emergency Alert
WPAS	Wireless Public Alerting Service

## 4 Assumptions

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This clause defines the assumptions associated with the support of international roaming for WEA.

This standard only addresses those alerting services that adhere to the applicable 3GPP PWS standards.

## 5 Requirements

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This clause defines the requirements associated with the support of international roaming for CMAS.

### 5.1 Activation of Alert Levels

When the CMAS message category is selected, the mobile device shall put the Message Identifiers for WEA mandatory-to-display messages and the Message Identifiers for WEA for additional languages into the search list on the Subscriber Identity Module (SIM)/Universal Subscriber Identity Module (USIM).

For example: the WEA Presidential Alert level will always be present in the Search List and, therefore, both Message Identifier (MID) = 4370 (mandatory-to-display) and MID = 4383 (not-mandatory-to-display) will be configured in the Search List.

For EU-Alert, Korea Public Alert System (KPAS), and WPAS capable devices to receive and display WEA Extreme Alerts when roaming in the U.S., the Message Identifiers that correspond to Extreme alerts (MID = 4371, 4372, 4384, and 4385) shall be put into the search list when Extreme alerts are activated.

Similarly, for EU-Alert, KPAS and WPAS capable devices to receive WEA Severe alerts when roaming in U.S., the Message Identifiers that correspond to the Severe alerts (MID = 4373 to 4378 and 4386 to 4391) shall be put into the search list when Severe alerts are activated.

In the same way, for EU-Alert, KPAS, and WPAS capable devices to receive WEA Amber alerts when roaming in U.S., the Message Identifiers that correspond to the Amber alerts (MID = 4379 and 4392) shall be put into the search list when users select the Amber alerts.

See ATIS-0700010.v003 *Wireless Emergency Alert (WEA) 3.0 via EPS Public Warning System Specification* [Ref 9] for further details on the Message Identifier details used in U.S.

#### NOTE:

- EU-Alert and KPAS messages are broadcast using two Message Identifier values (MID = 4371 and 4384).
- All WPAS messages are "Broadcast Immediate" messages which employ the same Message Identifier (MID=4370) as the WEA Presidential Alert.

For WEA, WPAS capable devices to receive EU-Alert messages when roaming in European countries that support EU-Alerts, the Message Identifier values 4371, 4372, 4384, and 4385 shall be put into search list when user selects Extreme alerts (even though only 4371 and 4384 are used for EU-Alerts). In the same way, for WEA, WPAS capable devices to receive KPAS messages when roaming in Korea, the Message Identifier values 4371, 4372, 4384, and 4385 shall be put into search list when the user selects the Extreme alerts (even though only 4371 is used for KPAS messages).

### 5.2 Language Selection

For the U.S. subscriber to be able to select Spanish WEA alerts, the mobile device shall provide a menu to select languages to filter alerts as per Clause 9.4.1.2.3 in 3GPP TS 23.041 [Ref 2] and as per ATIS-0700036.v002, *Wireless Emergency Alert (WEA) 3.0 Mobile Device Behavior (MDB) Specification* [Ref 8].

The same capability to select languages would be required on EU-Alert capable devices as per ETSI TS 102 900 [Ref 100].

A generic device that supports PWS should support language selection as per Clause 9.4.1.2.3 in 3GPP TS 23.041 [Ref 2].

### 5.3 Support of Character Sets

To support roaming of U.S. subscribers with a WEA capable device into Korea, the mobile device shall support the Universal Character Set 2 (UCS-2) character set [Ref 4], next to the default Global System for Mobile communications (GSM) 7-bit alphabet [Ref 1].

KPAS and WPAS capable devices would be expected to support the default GSM 7-bit alphabet [Ref 1] for the support of English text alerts while roaming in the U.S., or while roaming in a European country.

A generic device that supports PWS should support both the default GSM 7-bit alphabet and the UCS-2 character set where the character set that is used is indicated through the Data Coding Scheme parameter as defined in 3GPP TS 23.038 [Ref 1].

### 5.4 Message Length

Note that for

- WEA, the maximum message length, per ATIS-0700010.v003 [Ref 9], is limited to 90 GSM 7-bit characters for GSM and Universal Mobile Telecommunication System (UMTS) networks and limited to 360 GSM 7-bit characters for Long Term Evolution (LTE) networks.
- KPAS, the maximum message length is limited to 90 UCS-2 characters per TTAK.KO-06.0263/R1 [Ref 101].
- The maximum length for alerts in other countries is determined based on the respective regional requirements.

### 5.5 Ringtone & Vibration Cadence

The ringtone and vibration cadence for WEA mobile devices is defined in ATIS-0700036.v002 [Ref 8].

The ringtone and vibration cadence for WPAS mobile devices is defined in ATIS-0700021 [Ref 6].

A different ringtone and vibration cadence than the one for WEA is not defined for any other country. However, ringtone and vibration cadence shall be PWS-specific as per ETSI TS 102 900 [Ref 100].

### 5.6 Alert Banner

Mobile device manufacturers may implement an alert banner indicating the type of PWS message that is being displayed (e.g., Presidential Alert in WEA). In WEA, a Presidential message is transmitted with the Message Identifier 4370 or 4383 (see 3GPP TS 23.041 [Ref 2]). Other countries may transmit messages with the same Message Identifier but may not have a president. An alert banner showing “Presidential message” would be misleading.

For WPAS, a Canadian-specific alert banner has been defined in ATIS-0700021 [Ref 6].

For UAE-Alert, UAE-specific banners have been defined by the UAE Telecommunications Regulatory Authority. See <https://www.tra.gov.ae/userfiles/assets/lgz6mOeOihm.pdf>.

If an alert banner has been implemented, it should reflect the message type as used in the country where the mobile device is roaming but shall at least not be misleading.

### 5.7 Embedded References

In the US, WEA-capable mobile devices are mandated by the FCC to support WEA Alert Messages that include embedded references (i.e., URL, telephone number). The FCC further mandates that the embedded references (e.g., URLs, telephone numbers) in WEA alert messages shall be clickable by the mobile device user.

NOTE: If the Alert Originators include URLs with characters that 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. To avoid this situation, the Alert Originators should not use the characters "{", "}", "|", "\", "^", "~", "[", "]", and "" in their embedded URLs. See IETF RFC 1738 [Ref 10] regarding unsafe characters.

## **6 Network Architecture**

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The network architecture for transmitting PWS messages is defined in Clause 3 of 3GPP TS 23.041 [Ref 2].

## **7 Comparison of International PWS Services**

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Annexes B through L describe PWS type services that have been implemented in various countries of various regions of the world. The following table provides a summary and comparison of these PWS services with the U.S.-based WEA/CMAS service:

Table 8.1 – Comparison of WEA/CMAS with International PWS Services

Country	US	Canada	Netherlands	Lithuania	Korea	Taiwan	Israel	Chile	China	New Zealand	UAE	Romania
PWS Service	WEA/ CMAS	WPAS	NL-Alert	LT-Alert	KPAS	TW-CMAS	Personal Message	CL-Alert		EMA	UAE-Alert	RO-Alert
Radio Access Technology (RAT)	GSM UMTS LTE	LTE	GSM UMTS LTE	GSM UMTS	LTE	UMTS LTE	GSM UMTS LTE	GSM UMTS	GSM UMTS LTE	GSM UMTS LTE	GSM UMTS LTE	GSM UMTS LTE
CMAS Level & Message ID												
Presidential 4370	90 GSM7 on GSM & UMTS 360 GSM7 on LTE	UCS2 GSM7		UCS2		90 UCS2	UCS2	90 GSM7	UCS2	GSM7	UCS2	GSM7
Extreme 4371	90 GSM7 on GSM & UMTS 360 GSM7 on LTE		GSM7	UCS2	90 UCS2	90 UCS2	UCS2		UCS2		UCS2	GSM7
Extreme 4372	90 GSM7 on GSM & UMTS 360 GSM7 on LTE			UCS2		90 UCS2	UCS2		UCS2		UCS2	
Severe 4373-4378	90 GSM7 on GSM & UMTS 360 GSM7 on LTE			UCS2		90 UCS2	UCS2		UCS2		UCS2	GSM7
Amber 4379	90 GSM7 on GSM & UMTS 360 GSM7 on LTE			UCS2		90 UCS2			UCS2		UCS2	GSM7
Exercise 4381												GSM7
Presidential 4383	150 GSM7 on GSM & UMTS 360 GSM7 on LTE			GSM7 UCS2		90 GSM7			GSM7 UCS2		GSM7	
Extreme 4384	150 GSM7 on GSM & UMTS 360 GSM7 on LTE			GSM7 UCS2		90 GSM7			GSM7 UCS2		GSM7	
Extreme 4385	150 GSM7 on GSM & UMTS 360 GSM7 on LTE			GSM7 UCS2		90 GSM7			GSM7 UCS2		GSM7	

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Severe 4386-4391	150 GSM7 on GSM & UMTS 360 GSM7 on LTE			GSM7 UCS2		90 GSM7			GSM7 UCS2		GSM7	
Amber 4392	150 GSM7 on GSM & UMTS 360 GSM7 on LTE			GSM7 UCS2		90 GSM7			GSM7 UCS2		GSM7	
Public Safety 4396	90 GSM7 on GSM & UMTS 360 GSM7 on LTE										UCS2	
Public Safety 4397	90 GSM7 on GSM & UMTS 360 GSM7 on LTE										GSM7	
State/Local WEA Test 4398	90 GSM7 on GSM & UMTS 360 GSM7 on LTE										UCS2	
State/Local WEA Test 4399	90 GSM7 on GSM & UMTS 360 GSM7 on LTE										GSM7	
<b>Languages</b>	English Spanish	English French	Dutch	Lithuanian Russian English	Korean	Chinese English	Arabic Hebrew Russian English	Spanish	Chinese English	English	Arabic English	Romanian
<b>Ringtone &amp; Vibration</b>	WEA/ CMAS	WPAS	specific	specific	specific	specific	specific	specific	specific	specific		WEA
<b>Banner</b>	-	WPAS	-	-	-	-	-	-	-	"Emergency Alert"	UAE- specific	RO-Alert specific

**Legend:**

- GSM7 = Default GSM 7-bit alphabet with no limitation in the number of characters below the system maximum.
- 90 GSM7 = Default GSM 7-bit alphabet with a maximum of 90 characters.
- 360 GSM7 = Default GSM 7-bit alphabet with a maximum of 360 characters.
- UCS2 = UCS-2 character set with no limitation in the number of characters below the system maximum.
- 90 UCS2 = UCS-2 character set with a maximum of 90 characters.

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- Specific = Ringtone and vibration cadence are specified to be PWS specific, but the ringtone and cadence themselves are not defined. This Standard assumes WEA specific alerting tone and vibration cadence is used.
- = Banner has not been specified.

Note that some countries broadcast messages with Message Identifiers in the range below 1000 to mobile devices that are not WEA/CMAS/EU-Alert capable but do support Cell Broadcast.

## Annex A: Use Cases

---

(informative)

This informative annex illustrates how a user with a PWS-capable device might experience receiving warning messages when roaming in other countries.

This clause defines the following end user view Use Cases that applies to this Standard:

- Use Case 1 – Inbound Roamer from U.S. in Canada, no language selected.
- Use Case 2 – Inbound Roamer from U.S. in EU-Alert country, no language selected.
- Use Case 3 – Inbound Roamer from U.S. in Korea, no language selected.
- Use Case 4 – Inbound Roamer from U.S. in Canada, Spanish selected.
- Use Case 5 – Inbound Roamer from U.S. in EU-Alert country, English selected.
- Use Case 6 – Inbound Roamer from U.S. in Korea, English selected.
- Use Case 7 – Inbound Roamer from Canada in U.S., no language selected.
- Use Case 8 – Inbound Roamer from EU-Alert country in U.S., no language selected.
- Use Case 9 – Inbound Roamer from Korea in U.S., no language selected.
- Use Case 10 – Inbound Roamer from EU-Alert country in U.S., English selected.
- Use Case 11 – Inbound Roamer from Korea in U.S., English selected.
- Use Case 12 – Inbound Roamer from EU-Alert country in U.S., Spanish selected.
- Use Case 13 – Inbound Roamer from Korea in U.S., Spanish selected.
- Use Case 14 – Inbound Roamer from EU-Alert country in U.S., Spanish selected, no opt out.
- Use Case 15 – Inbound Roamer from Korea in U.S., Spanish selected, no opt out.
- Use Case 16 – Inbound Roamer from EU-Alert Country in Canada.
- Use Case 17 – Inbound Roamer from Korea in Canada.

### ***A.1 Use Case 1 – Inbound Roamer from U.S. in Canada, No Language Selected***

#### **A.1.1 Short Description**

The U.S. subscriber is roaming in Canada with a WEA capable device enabled to receive WEA extreme alerts with no language setting on the language-selection menu. This U.S. subscriber will receive Canadian WPAS messages which are always broadcast as mandatory-to-display messages.

#### **A.1.2 Actors**

U.S. subscriber.

#### **A.1.3 Pre-Conditions**

The WEA capable device has WEA activated for level Extreme Alerts, but has no language selected in the language selection menu.

In Canada, WPAS messages are broadcast with the same Message Identifier value (MID = 4370) used for WEA Presidential Alerts.

#### **A.1.4 Post-Condition**

Canadian WPAS messages are presented to the U.S. subscriber with WEA alerting tone and vibration cadence.

### **A.1.5 Normal Flow**

A bilingual WPAS message is broadcast in English and French in Canada as a mandatory-to-display message. The bilingual alert text from the WPAS message is displayed on the U.S. subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.1.6 Alternative Flows**

Flow A:

The WPAS alert text may also be displayed on the U.S. subscriber's mobile device with WPAS banner, WPAS alerting tone, and WPAS vibration cadence.

Flow B:

The WPAS alert text will be displayed on the U.S. subscriber's mobile device independent of WEA alert level setting and language setting.

Flow C:

The alert text in a WPAS message can also be in English or French. The mobile devices of the U.S. subscriber will display alert text in such WPAS messages along with the WEA alerting tone and vibration cadence.

Flow D:

The alert text in a WPAS message can also be in English or French. The mobile devices of the U.S. subscriber will display alert text in such WPAS messages along with the WPAS banner, WPAS alerting tone, and WPAS vibration cadence.

## ***A.2 Use Case 2 – Inbound Roamer from U.S. in EU-Alert Country, No Language Selected***

### **A.2.1 Short Description**

The U.S. subscriber is roaming in a European country that offers an EU-Alert service with a WEA capable device enabled to receive WEA Extreme or Extreme and Severe alerts with no language setting on the language-selection menu. This U.S. subscriber will receive EU-Alert messages broadcast mandatory-to-display messages.

### **A.2.2 Actors**

U.S. subscriber.

### **A.2.3 Pre-Conditions**

The WEA capable device has WEA activated for Extreme or Extreme and Severe Alerts, but has no language selected in the WEA language selection menu.

All EU-Alert messages are broadcast with two of the Message Identifier values (MID = 4371 for local language and MID = 4384 for additional language), used for the WEA Extreme Alert.

EU Alerts equivalent of WEA Presidential Alerts and WEA Severe Alerts are not used.

### **A.2.4 Post-Condition**

EU-Alert messages are presented to the U.S. subscriber using the U.S. WEA alerting tone and vibration cadence.

### **A.2.5 Normal Flow**

Flow A:

An EU-Alert message is broadcast in the local language as a mandatory-to-display message.

The alert text in the local language from the EU-Alert message is displayed on the U.S. subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow B:

An EU-Alert message is broadcast in English as a mandatory-to-display message.

The alert text in English from the EU-Alert message is displayed on the U.S. subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow C:

An EU-Alert message is broadcast in English as a non-mandatory-to-display message.

The alert text in English from the EU-Alert message is not displayed on the U.S. subscriber's mobile device.

### **A.2.6 Alternative Flows**

If the U.S. subscriber has not enabled the mobile device to receive WEA Extreme alerts, then none of the EU-alerts presented in Clause A.2.5 will be displayed on the mobile device screen.

## ***A.3 Use Case 3 – Inbound Roamer from U.S. in Korea, No Language Selected***

### **A.3.1 Short Description**

The U.S. subscriber is roaming in Korea which offers KPAS with a WEA capable device enabled to receive WEA level Extreme or Extreme and Severe alerts with no language setting on the language selection menu. This U.S. subscriber will receive KPAS messages in Hangul.

### **A.3.2 Actors**

U.S. subscriber.

### **A.3.3 Pre-Conditions**

The WEA capable device has WEA activated for Extreme or Extreme and Severe Alerts, but has no language selected in the WEA language selection menu.

All KPAS messages are broadcast with a single Message Identifier value (MID = 4371), used for the WEA Extreme Alert.

All KPAS messages are broadcast in Hangul with a maximum of 90 characters (which requires 180 bytes in UCS-2) [Ref 4]. It is assumed that the mobile device is capable of displaying messages in the UCS-2 character set [Ref 4], since this is basic Cell Broadcast (CB) capability.

KPAS alerts equivalent of WEA Presidential Alerts and WEA Severe Alerts are not used in Korea.

### **A.3.4 Post-Condition**

KPAS messages are presented to the U.S. subscriber using the U.S. WEA alerting tone and vibration cadence.

### **A.3.5 Normal Flow**

A KPAS message is broadcast with alert text in Hangul as a mandatory-to-display message.

The alert text in Hangul from the KPAS message is displayed on the U.S. subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.3.6 Alternative Flows**

If the U.S. subscriber has not enabled the mobile device to receive WEA Extreme alerts, then the alert text from the KPAS message will not be displayed on the mobile device screen.

## ***A.4 Use Case 4 – Inbound Roamer from U.S. in Canada, Spanish Selected***

### **A.4.1 Short Description**

The U.S. subscriber is roaming in Canada; with a WEA capable device enabled to receive and with WEA level Extreme with Spanish selected in the language selection menu. This U.S. subscriber will receive all Canadian WPAS messages which are always broadcast as mandatory-to-display messages.

### **A.4.2 Actors**

U.S. subscriber.

### **A.4.3 Pre-Conditions**

The WEA capable device has WEA activated for Extreme Alerts and has Spanish selected in the language selection menu.

WPAS messages are broadcast with the same Message Identifier value (MID = 4370) used for WEA Presidential Alerts.

Canadian WPAS messages in Spanish are not broadcast.

### **A.4.4 Post-Condition**

Canadian WPAS messages are presented to the U.S. subscriber with WEA alerting tone and vibration cadence.

### **A.4.5 Normal Flow**

A bilingual WPAS message in English and French is broadcast in Canada as a mandatory-to-display message.

The bilingual alert text from the WPAS message is displayed on the U.S. subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.4.6 Alternative Flows**

Flow A:

The WPAS alert text may also be displayed on the U.S. subscriber's mobile device with WPAS banner, WPAS alerting tone, and WPAS vibration cadence.

Flow B:

WPAS alerts will be presented to the U.S. subscriber's mobile device with WEA alerting tone and vibration cadence independent of alert level setting and language setting.

Flow C:

The alert text in a WPAS message can also be in English or French. The mobile device of the U.S. subscriber will display alert text in such WPAS messages along with the WEA alerting tone and vibration cadence.

Flow D:

The alert text in a WPAS message can also be in English or French. The mobile device of the U.S. subscriber will display alert text in such WPAS messages along with the WPAS banner, WPAS alerting tone, and WPAS vibration cadence.

## **A.5 Use Case 5 – Inbound Roamer from U.S. in EU-Alert Country, English Selected**

### **A.5.1 Short Description**

The U.S. subscriber is roaming in a European country that offers an EU-Alert service with a WEA capable device enabled to WEA level Extreme or Extreme and Severe and with English selected in the language selection menu. This U.S. subscriber will receive EU-Alert messages in the local language and in English if broadcast.

### **A.5.2 Actors**

U.S. subscriber.

### **A.5.3 Pre-Conditions**

The WEA capable device has WEA activated for Extreme or Extreme and Severe Alerts, and English has been selected in the WEA language selection menu.

All EU-Alert messages are broadcast with a two of the Message Identifier values (MID = 4371 for local language and MID = 4384 for additional language), used for the WEA Extreme Alert.

EU-Alert equivalents of WEA Presidential Alerts and WEA Severe Alerts are not used.

### **A.5.4 Post-Condition**

EU-Alert messages are presented to the U.S. subscriber using the U.S. WEA alerting tone and vibration cadence.

### **A.5.5 Normal Flow**

Flow A:

An EU-Alert message is broadcast in the local language as a mandatory-to-display message.

The alert text in the local language from the EU-Alert message is displayed on the U.S. subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow B:

An EU-Alert message is broadcast in English as a mandatory-to-display message.

The alert text in English from the EU-Alert message is displayed on the U.S. subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow C:

An EU-Alert message is broadcast in English as a non-mandatory-to-display message.

The alert text in English from the EU-Alert message is displayed on the U.S. subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.5.6 Alternative Flows**

If the U.S. subscriber has not enabled the mobile device to receive WEA Extreme alerts, then none of the EU-alerts presented in Clause A.5.5 will be displayed on the mobile device screen.

## **A.6 Use Case 6 – Inbound Roamer from U.S. in Korea, English Selected**

### **A.6.1 Short Description**

The U.S. subscriber is roaming in Korea which offers KPAS with a WEA capable device enabled to receive WEA level Extreme or Extreme and Severe and with English selected in the language selection menu. This U.S. subscriber will receive KPAS in Hangul.

### **A.6.2 Actors**

U.S. subscriber.

### **A.6.3 Pre-Conditions**

The WEA capable device has WEA activated for Extreme or Extreme and Severe Alerts and English has been selected in the WEA language selection menu.

All KPAS messages are broadcast with a single Message Identifier value (MID = 4371), used for the WEA Extreme Alert.

All KPAS messages are broadcast in Hangul with a maximum of 90 characters (which requires 180 bytes in UCS-2) [Ref 4]. It is assumed that the mobile device is capable of displaying messages in the UCS-2 character set [Ref 4], since this is basic CB capability.

KPAS alerts equivalent of WEA Presidential Alerts and WEA Severe Alerts are not used in Korea.

### **A.6.4 Post-Condition**

KPAS messages are presented to the U.S. subscriber using the U.S. WEA alerting tone and vibration cadence.

### **A.6.5 Normal Flow**

A KPAS message is broadcast with alert text in Hangul as a mandatory-to-display message.

The alert text in Hangul from the KPAS message is displayed on the U.S. subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.6.6 Alternative Flows**

If the U.S. subscriber has not enabled the mobile device to receive WEA Extreme alerts, then the alert text from the KPAS message will not be displayed on the mobile device screen.

## **A.7 Use Case 7 – Inbound Roamer from Canada in U.S., No Language Selected**

### **A.7.1 Short Description**

The Canadian WPAS subscriber is roaming in the U.S. with WPAS capable device and with no language setting on the language selection menu. This Canadian subscriber will receive WEA messages in English.

### **A.7.2 Actors**

Canadian subscriber.

### **A.7.3 Pre-Conditions**

Either while in Canada, or otherwise, the Canadian subscriber roaming in the U.S. has configured the mobile device to receive WEA configured for level Extreme Alerts, but no language has been selected in the language selection menu.

### **A.7.4 Post-Condition**

WEA messages of level Extreme are presented to the Canadian subscriber with WPAS banner, WPAS alerting tone and WPAS vibration cadence.

### **A.7.5 Normal Flow**

Flow A:

WEA message Extreme level is broadcast in English.

The alert text in English from the WEA message is displayed on the Canadian subscriber's mobile device with bilingual (French and English) WPAS banner, WPAS alerting tone, and WPAS vibration cadence.

Flow B:

A presidential WEA message is broadcast in English.

The alert text in English from the presidential WEA message is displayed on the Canadian subscriber's mobile device with bilingual (French and English) WPAS banner, WPAS alerting tone, and WPAS vibration cadence.

Flow C:

WEA message level of Extreme is broadcast in Spanish.

The alert text in Spanish from the WEA message is not displayed on Canadian subscriber's mobile device.

Flow D:

A presidential WEA message is broadcast in Spanish.

The alert text in Spanish from the presidential WEA message is not displayed on the Canadian subscriber's mobile device.

## **A.7.6 Alternative Flows**

Flow A:

WEA messages will be presented to the Canadian subscriber with the U.S. WEA ringtone while the subscriber is roaming in the U.S.

Flow B:

Mobile devices will receive and display the alert text only when the WEA alert level matches to that of WEA alert received, unless it is a Presidential alert.

In addition, the selection of Spanish in the language selection menu will determine whether or not a mobile device can receive WEA alerts broadcast in Spanish language.

## **A.8 Use Case 8 – Inbound Roamer from EU-Alert Country in U.S., No Language Selected**

### **A.8.1 Short Description**

The European subscriber is roaming in the U.S. with EU-Alert capable mobile device enabled to receive EU-Alert (level Extreme) and with no language selection in the language selection menu. This European subscriber will receive WEA level Extreme messages in English.

### **A.8.2 Actors**

European subscriber.

### **A.8.3 Pre-Conditions**

The EU-Alert capable device has EU-Alert activated (for Extreme Alerts), but has no language selected in the EU-Alert language selection menu.

The WEA alerting tone and vibration cadence is used for EU-Alerts.

### **A.8.4 Post-Condition**

Presidential WEA messages and WEA messages with Extreme level are presented to the European subscriber with WEA alerting tone and vibration cadence.

### **A.8.5 Normal Flow**

Flow A:

WEA message Extreme level is broadcast in English.

The alert text in English from the WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow B:

A presidential WEA message is broadcast in English.

The alert text in English from the presidential WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow C:

WEA message level of Extreme is broadcast in Spanish.

The alert text in Spanish from the WEA message is not displayed on the European subscriber's mobile device.

Flow D:

A presidential WEA message is broadcast in Spanish.

The alert text in Spanish from the presidential WEA message is not displayed on the European subscriber's mobile device.

Flow E:

WEA Amber message is broadcast in English.

The alert text in English from the WEA Amber message is not displayed on the European subscriber's mobile device.

Flow F:

WEA Amber message is broadcast in Spanish.

The alert text in English from the WEA Amber message is not displayed on the European subscriber's mobile device.

### **A.8.6 Alternative Flows**

Mobile devices will receive and display the alert text only when the WEA alert level matches to that of WEA alert received unless it is a Presidential alert.

In addition, the selection of Spanish in the language selection menu will determine whether or not a mobile device can receive WEA alerts broadcast in Spanish language.

## ***A.9 Use Case 9 – Inbound Roamer from Korea in U.S., No Language Selected***

### **A.9.1 Short Description**

The Korean subscriber is roaming in the U.S.; has activated KPAS with a KPAS capable mobile device with no language selected in the language selection menu. This Korean subscriber will receive WEA level Extreme messages in English.

### **A.9.2 Actors**

Korean subscriber.

### **A.9.3 Pre-Conditions**

The KPAS capable device has KPAS activated, but has no language selected in the KPAS language selection menu.

The WEA alerting tone and vibration cadence is used for KPAS.

#### **A.9.4 Post-Condition**

Presidential WEA messages and WEA messages with Extreme level are presented to the Korean subscriber with WEA alerting tone and vibration cadence.

#### **A.9.5 Normal Flow**

Flow A:

WEA message Extreme level is broadcast in English.

The alert text in English from the WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow B:

A presidential WEA message is broadcast in English.

The alert text in English from the presidential WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow C:

WEA message level of Extreme is broadcast in Spanish.

The alert text in Spanish from the WEA message is not displayed on the Korean subscriber's mobile device.

Flow D:

A presidential WEA message is broadcast in Spanish.

The alert text in Spanish from the presidential WEA message is not displayed on the Korean subscriber's mobile device.

Flow E:

WEA Amber message is broadcast in English.

The alert text in English from the WEA Amber message is not displayed on the Korean subscriber's mobile device.

Flow F:

WEA Amber message is broadcast in Spanish.

The alert text in English from the WEA Amber message is not displayed on the Korean subscriber's mobile device.

#### **A.9.6 Alternative Flows**

Mobile devices will receive and display the alert text only when the WEA alert level matches to that of WEA alert received unless it is a Presidential alert.

In addition, the selection of Spanish in the language selection menu will determine whether or not a mobile device can receive WEA alerts broadcast in Spanish language.

## ***A.10 Use Case 10 – Inbound Roamer from EU-Alert Country in U.S., English Selected***

### **A.10.1 Short Description**

The European subscriber is roaming in the U.S. with EU-Alert capable mobile device enabled to receive EU-Alert (level Extreme) and with English selected in the language selection menu. This European subscriber will receive WEA level Extreme messages in English.

### **A.10.2 Actors**

European subscriber.

### **A.10.3 Pre-Conditions**

The EU-Alert capable device has EU-Alert activated (for Extreme Alerts) and has English selected in the EU-Alert language selection menu.

The WEA alerting tone and vibration cadence is used for EU-Alerts.

### **A.10.4 Post-Condition**

Presidential WEA messages and WEA messages with Extreme level are presented to the European subscriber with WEA alerting tone and vibration cadence.

### **A.10.5 Normal Flow**

Flow A:

WEA message Extreme level is broadcast in English.

The alert text in English from the WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow B:

A presidential WEA message is broadcast in English.

The alert text in English from the presidential WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow C:

WEA message level of Extreme is broadcast in Spanish.

The alert text in Spanish from the WEA message is not displayed on the European subscriber's mobile device.

Flow D:

A presidential WEA message is broadcast in Spanish.

The alert text in Spanish from the presidential WEA message is not displayed on the European subscriber's mobile device.

Flow E:

WEA Amber message is broadcast in English.

The alert text in English from the WEA Amber message is not displayed on the European subscriber's mobile device.

Flow F:

WEA Amber message is broadcast in Spanish.

The alert text in English from the WEA Amber message is not displayed on the European subscriber's mobile device.

### **A.10.6 Alternative Flows**

Mobile devices will receive and display the alert text only when the WEA alert level matches to that of WEA alert received unless it is a Presidential alert.

In addition, the selection of Spanish in the language selection menu will determine whether or not a mobile device can receive WEA alerts broadcast in Spanish language.

## ***A.11 Use Case 11 – Inbound Roamer from Korea in U.S., English Selected***

### **A.11.1 Short Description**

The Korean subscriber is roaming in the U.S. with KPAS capable mobile device enabled to receive KPAS and with English selected in the language selection menu. This Korean subscriber will receive WEA level Extreme messages in English.

### **A.11.2 Actors**

Korean subscriber.

### **A.11.3 Pre-Conditions**

The KPAS capable device has KPAS activated and has English selected in the KPAS language selection menu.

It is an assumption that KPAS capable devices allow selection of languages to support international roaming.

The WEA alerting tone and vibration cadence is used for KPAS.

### **A.11.4 Post-Condition**

Presidential WEA messages and WEA messages with Extreme level are presented to the Korean subscriber with WEA alerting tone and vibration cadence.

### **A.11.5 Normal Flow**

Flow A:

WEA message Extreme level is broadcast in English.

The alert text in English from the WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow B:

A presidential WEA message is broadcast in English.

The alert text in English from the presidential WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow C:

WEA message level of Extreme is broadcast in Spanish.

The alert text in Spanish from the WEA message is not displayed on the Korean subscriber's mobile device.

Flow D:

A presidential WEA message is broadcast in Spanish.

The alert text in Spanish from the presidential WEA message is not displayed on the Korean subscriber's mobile device.

Flow E:

WEA Amber message is broadcast in English.

The alert text in English from the WEA Amber message is not displayed on the Korean subscriber's mobile device.

Flow F:

WEA Amber message is broadcast in Spanish.

The alert text in English from the WEA Amber message is not displayed on the Korean subscriber's mobile device.

### **A.11.6 Alternative Flows**

Mobile devices will receive and display the alert text only when the WEA alert level matches to that of WEA alert received unless it is a Presidential alert.

In addition, the selection of Spanish in the language selection menu will determine whether or not a mobile device can receive WEA alerts broadcast in Spanish language.

## ***A.12 Use Case 12 – Inbound Roamer from EU-Alert country in U.S., Spanish Selected***

### **A.12.1 Short Description**

The European subscriber is roaming in the U.S. with EU-Alert capable mobile device enabled to receive EU-Alert (level Extreme) with Spanish selected in the language selection menu. This European subscriber will receive WEA level Extreme messages in English and in Spanish.

### **A.12.2 Actors**

European subscriber.

### **A.12.3 Pre-Conditions**

The EU-Alert capable device has EU-Alert activated (for Extreme Alerts) and has Spanish selected in the EU-Alert language selection menu.

The WEA alerting tone and vibration cadence are used for EU-Alerts.

### **A.12.4 Post-Condition**

Presidential WEA messages and WEA messages with Extreme level are presented to the European subscriber with WEA alerting tone and vibration cadence.

### **A.12.5 Normal Flow**

Flow A:

WEA message Extreme level is broadcast in English.

The alert text in English from the WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow B:

A presidential WEA message is broadcast in English.

The alert text in English from the presidential WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow C:

WEA message level of Extreme is broadcast in Spanish.

The alert text in Spanish from the WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow D:

A presidential WEA message is broadcast in Spanish.

The alert text in Spanish from the presidential WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow E:

WEA Amber message is broadcast in English.

The alert text in English from the WEA Amber message is not displayed on the European subscriber's mobile device.

Flow F:

WEA Amber message is broadcast in Spanish.

The alert text in English from the WEA Amber message is not displayed on the European subscriber's mobile device.

### **A.12.6 Alternative Flows**

Mobile devices will receive and display the alert text only when the WEA alert level matches to that of WEA alert received unless it is a Presidential alert.

In addition, the selection of Spanish in the language selection menu will determine whether or not a mobile device can receive WEA alerts broadcast in Spanish language.

## ***A.13 Use Case 13 – Inbound Roamer from Korea in U.S., Spanish Selected***

### **A.13.1 Short Description**

The Korean subscriber is roaming in the U.S. with KPAS capable mobile device enabled to receive KPAS alerts with Spanish selected in the language selection menu. This Korean subscriber will receive WEA level Extreme messages in English and in Spanish.

### **A.13.2 Actors**

Korean subscriber.

### **A.13.3 Pre-Conditions**

The KPAS capable device has KPAS activated and has Spanish selected in the KPAS language selection menu.

The WEA alerting tone and vibration cadence are used for KPAS.

### **A.13.4 Post-Condition**

Presidential WEA messages and WEA messages with Extreme level are presented to the Korean subscriber with WEA alerting tone and vibration cadence.

### **A.13.5 Normal Flow**

Flow A:

WEA message Extreme level is broadcast in English.

The alert text in English from the WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow B:

A presidential WEA message is broadcast in English.

The alert text in English from the presidential WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow C:

WEA message level of Extreme is broadcast in Spanish.

The alert text in Spanish from the WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow D:

A presidential WEA message is broadcast in Spanish.

The alert text in Spanish from the presidential WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow E:

WEA Amber message is broadcast in English.

The alert text in English from the WEA Amber message is not displayed on the Korean subscriber's mobile device.

Flow F:

WEA Amber message is broadcast in Spanish.

The alert text in English from the WEA Amber message is not displayed on the Korean subscriber's mobile device.

### **A.13.6 Alternative Flows**

Mobile devices will receive and display the alert text only when the WEA alert level matches to that of WEA alert received unless it is a Presidential alert.

In addition, the selection of Spanish in the language selection menu will determine whether or not a mobile device can receive WEA alerts broadcast in Spanish language.

## ***A.14 Use Case 14 – Inbound Roamer from EU-Alert Country in U.S., Spanish Selected, No Opt Out***

### **A.14.1 Short Description**

The European subscriber is roaming in the U.S. with EU-Alert capable mobile device enabled to receive all alerts with Spanish selected in the language selection menu. This European subscriber will receive WEA messages in English and in Spanish.

### **A.14.2 Actors**

European subscriber.

### **A.14.3 Pre-Conditions**

The EU-Alert capable device has enabled the device to receive all alerts and has selected Spanish in the language selection menu.

The WEA alerting tone and vibration cadence are used for EU-Alerts.

### **A.14.4 Post-Condition**

All WEA alerts are presented to the European subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.14.5 Normal Flow**

Flow A:

WEA message Extreme level is broadcast in English.

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The alert text in English from the WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

### Flow B:

A presidential WEA message is broadcast in English.

The alert text in English from the presidential WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

### Flow C:

WEA message level of Extreme is broadcast in Spanish.

The alert text in Spanish from the WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

### Flow D:

A presidential WEA message is broadcast in Spanish.

The alert text in Spanish from the presidential WEA message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

### Flow E:

WEA Amber message is broadcast in English.

The alert text in English from the WEA Amber message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

### Flow F:

WEA Amber message is broadcast in Spanish.

The alert text in English from the WEA Amber is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

## **A.14.6 Alternative Flows**

None.

## ***A.15 Use Case 15 – Inbound Roamer from Korea in U.S., Spanish Selected, No Opt Out***

### **A.15.1 Short Description**

The Korean subscriber is roaming in the U.S. with KPAS capable mobile device enabled to receive all alerts with Spanish selected in the language selection menu. This Korean subscriber will receive all WEA messages in English and Spanish.

### **A.15.2 Actors**

Korean subscriber.

### **A.15.3 Pre-Conditions**

The KPAS capable device has enabled the device to receive all alerts and has Spanish selected in the KPAS language selection menu.

The WEA alerting tone and vibration cadence are used for KPAS.

### **A.15.4 Post-Condition**

All WEA alerts are presented to the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.15.5 Normal Flow**

Flow A:

WEA message Extreme level is broadcast in English.

The alert text in English from the WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow B:

A presidential WEA message is broadcast in English.

The alert text in English from the presidential WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow C:

WEA message level of Extreme is broadcast in Spanish.

The alert text in Spanish from the WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow D:

A presidential WEA message is broadcast in Spanish.

The alert text in Spanish from the presidential WEA message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow E:

WEA Amber message is broadcast in English.

The alert text in English from the WEA Amber message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

Flow F:

WEA Amber message is broadcast in Spanish.

The alert text in English from the WEA Amber message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.15.6 Alternative Flows**

None.

## **A.16 Use Case 16 – Inbound Roamer from EU-Alert Country in Canada**

### **A.16.1 Short Description**

The European subscriber is roaming in Canada with EU-Alert capable mobile device enabled to receive EU-Alert (level Extreme) with no language selected in the language selection menu. This European subscriber will receive Canadian WPAS messages, which are always broadcast as mandatory-to-display messages.

### **A.16.2 Actors**

European subscriber.

### **A.16.3 Pre-Conditions**

The EU-Alert capable device has EU-Alert activated (for Extreme Alerts) with no language selected in the EU-Alert language selection menu.

The WEA alerting tone and vibration cadence are used for EU-Alerts.

### **A.16.4 Post-Condition**

All WPAS alerts are presented to the European subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.16.5 Normal Flow**

A bilingual WPAS message in English and French is broadcast in Canada as a mandatory-to-display message.

The bilingual alert text from the WPAS message is displayed on the European subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.16.6 Alternative Flows**

Flow A:

The WPAS alert text may also be displayed on the European subscriber's mobile device with WPAS banner, WPAS alerting tone, and WPAS vibration cadence.

Flow B:

The WPAS alert text will be displayed on the European subscriber's mobile device independent of language setting.

Flow C:

The alert text in a WPAS message can also be in English or French. The mobile device of the European subscriber will display alert text in such WPAS messages along with the WEA alerting tone and vibration cadence.

Flow D:

The alert text in a WPAS message can also be in English or French. The mobile device of the European subscriber will display alert text in such WPAS messages along with the WPAS banner, WPAS alerting tone, and WPAS vibration cadence.

## **A.17 Use Case 17 – Inbound Roamer from Korea in Canada**

### **A.17.1 Short Description**

The Korean subscriber is roaming in Canada with KPAS capable mobile device enabled to receive KPAS alerts with no language selected in the language selection menu. This Korean subscriber will receive Canadian WPAS messages, which are always broadcast as mandatory-to-display messages.

### **A.17.2 Actors**

Korean subscriber.

### **A.17.3 Pre-Conditions**

The KPAS capable device has KPAS activated with no language selected in the KPAS language selection menu. The WEA alerting tone and vibration cadence are used for KPAS alerts.

### **A.17.4 Post-Condition**

All WPAS alerts are presented to the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.17.5 Normal Flow**

A bilingual WPAS message in English and French is broadcast in Canada as a mandatory-to-display message.

The bilingual alert text from the WPAS message is displayed on the Korean subscriber's mobile device with WEA alerting tone and vibration cadence.

### **A.17.6 Alternative Flows**

Flow A:

The WPAS alert text may also be displayed on the Korean subscriber's mobile device with WPAS banner, WPAS alerting tone, and WPAS vibration cadence.

Flow B:

The WPAS alert text will be displayed on the Korean subscriber's mobile device independent of the language setting.

Flow C:

The alert text in a WPAS message can also be in English or French. The mobile devices of the Korean subscriber will display alert text in such WPAS messages along with the WEA alerting tone and vibration cadence.

Flow D:

The alert text in a WPAS message can also be in English or French. The mobile devices of the Korean subscriber will display alert text in such WPAS messages along with the WPAS banner, WPAS alerting tone, and WPAS vibration cadence.

## **Annex B: Korean Public Alert System (KPAS)**

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(informative)

This informative annex describes the requirements of KPAS and compares it to CMAS.

KPAS is specified in TTA.KO-06.0263/R1 [Ref 101] and specifies the Korean Public Alert system over LTE networks.

KPAS is specified for LTE networks only.

According to TTA.KO-06.0263/R1 [Ref 101], KPAS messages are provided with Class 0 and Class 1. Class 0 and Class 1 are divided depending on whether the message display setting (opt out function) is enabled or not. Class 0 shall be displayed on terminals regardless of the message display on/off setting. Class 1 messages are displayed depending on the user's setting of the message display on/off function. The messages are not displayed if the user sets this option to off.

There is no relation between the class indications as specified for KPAS and as specified in 3GPP TS 23.038 [Ref 1] and 3GPP TS 23.041 [Ref 2].

Each KPAS message shall support message size up to 180 bytes (90 Korean characters). The Data Coding Scheme value 0x58 shall be used for UCS-2 characters as per 3GPP TS 23.038 [Ref 1].

The mobile device shall support a specific alert tone and vibration cadence for KPAS, but the choice of alert tone and vibration cadence is left to the mobile device vendors.

The Message Identifiers in the range of 4370 to 4379 are defined. However, in deployment and operation, only 4371 will be used.

## Annex C: EU Alert

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(informative)

This informative annex describes the requirements of EU-Alert and compares it to CMAS.

EU-Alert is specified in ETSI TS 102 900 [Ref 100] and specifies the European Public Warning System using the Cell Broadcast Service and is therefore not technology neutral.

EU-Alert supports multiple languages as specified in 3GPP TS 23.038 [Ref 1].

The maximum length of the message is as specified in 3GPP TS 23.041 [Ref 2].

The Message Identifiers that have been allocated in 3GPP TS 23.041 [Ref 2] for EU-Alert are the same as for CMAS, although the naming of the alert levels differs. In practice not all levels and all alert types may be used. For example, the Netherlands only broadcast messages with a single Message Identifier, which is in the range of the CMAS Extreme Alerts. To support mobile devices that are on the market, but do not support the CMAS/EU-Alert Message Identifiers as specified in 3GPP TS 23.041 [Ref 2], also Message Identifiers below 1000 may be used. For example, the Netherlands uses Message Identifier 919 to broadcast messages in the local language, which can be activated by the subscriber when the mobile device supports basic Cell Broadcast.

The EU-Alert capable mobile device shall support the capabilities as specified in TS 23.041 [Ref 2], such as the language filter, and in addition the Man Machine Interface (MMI) shall allow activation of EU-Alert. The presentation of the EU-Alert messages is identical to the presentation of CMAS messages, although there may be additional local regulatory requirements.

The behavior of the mobile device when it receives an EU-Alert message is identical to the behavior as specified for the reception of CMAS messages (see ATIS-0700036.v002 [Ref 8]).

## Annex D: NCC Taiwan

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(informative)

This informative annex describes the requirements of the National Communications Commission (NCC) of Taiwan as specified in the Mobile Broadband System Assurance Technical Specification, dated January 28, 103 (see <http://www.ncc.gov.tw/>) and became effective under the LTE license. The specification contains a set of test cases from which the below requirements are deduced.

The disaster prevention alert services are based on cell broadcast in all LTE networks. Some service providers provide the service on UMTS too.

The MID that are to be configured for alert messages are either 911 or 4370 for Chinese language messages and 919 or 4383 for English language messages, although the Message Identifiers that are supported from the network side include all those that have been allocated in 3GPP TS 23.041 [Ref 2] for CMAS.

The alert tone and vibration that shall be activated upon message reception with MID = 4370 or 4383 is not specified in any detail. For message reception with MID = 911 or 919, there is no requirement for an alert tone or vibration (only requirement is that the message shall be displayed).

The CBC shall support a Required Monthly Test (RMT) with MID = 4380 for Chinese language messages and MID = 4393 for English language messages. There is no explicit requirement for the mobile device to present such messages.

The English test message that is to be broadcast to certify compliance with NCC requirements contains 356 characters.

## **Annex E: Israeli “Personal Message” Service Description**

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(informative and historical)

This informative annex describes the service description of the “Personal Message” warning distribution to all mobile devices via Cell Broadcast from the Ministry of Communications of the state of Israel, dated May 26, 2014 and is a component of the “National Message” warning service which includes other distribution channels as radio, television, billboards, etc.

The “Personal Message” warning message dissemination uses Cell Broadcast in GSM and UMTS.

The MID that are to be configured at the start of the “Personal Message” service are 919 to 922 for messages in Hebrew, English, Russian, and Arabic, respectively.

The MID range 4370 – 4382 has been identified to be used in a CMAS compatible manner. However, it is not specified how, and if, the MIDs in entire range shall be used. Allocation of the MID range to support multiple languages (4370-4395) will be required when mobile devices become available that support this functionality.

Due to a lack of budget to extend the service to LTE, the service has lost its usefulness and was switched off in 2016.

## Annex F: Chile's SAE Description

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(informative)

This informative annex describes the requirements of Chile's "Sistema de Alerta Emergencias" which is regulated in resolution 3261 (<http://www.leychile.cl/Navegar?idNorma=1041244>) and became effective as of June 19, 2012.

CL-Alert Local identifies the channel (Message Identifier) for dissemination of alert messages to a specific area. This Message Identifier shall be configured and enabled in the mobile device when the mobile device is acquired.

The MID that are to be configured for alert messages are either 919 or 4370. Other Message Identifiers in the range of 4371-4382 are reserved for future use.

Messages in English may be broadcast in the future with MID = 921 and 4411. Note that 4411 is not allocated for this purpose by 3GPP.

The maximum message length is 90 characters, although a reference is made to ETSI TS 102 900 [Ref 100], 3GPP TS 22.268 [Ref 5], and 3GPP TS 23.041 [Ref 2], which do not contain such a limitation.

Mobile device behavior shall be according to ATIS-0700036.v002 [Ref 8].

## **Annex G: Chinese Technical Requirements of the Short Message Service for Public Early Warning**

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(informative)

This informative annex describes the technical requirements for the Chinese Public Early Warning Service and compares it to CMAS.

The Chinese Public Early Warning Service is specified by the China Communications Standards Association (CCSA) in draft standard GB/T ST3-201313 and uses location-based SMS as well as Cell Broadcast technology.

The UE requirements are largely compatible with CMAS with the exception of the following.

The Chinese standard specifies four warning levels:

- Level 1, particularly important.
- Level 2, major importance.
- Level 3, greater importance.
- Level 4, general importance.

Since CMAS only knows three levels (Presidential, Extreme Alerts, and Severe Alerts), the CCSA specification states that level 4 messages will be broadcast with the MID of Amber Alerts (4379).

The MID range of 4370-4382 will be used for Chinese language messages and the MID range of 4383-4395 has been assigned to foreign languages broadcast.

Both MID ranges are described in an informative annex.

The CCSA specification applies to GSM and UMTS and is also specified for CDMA networks. Support on LTE networks is not required in the standard but is part of the test specification.

The user shall be allowed to control the volume of the audible ringtone and may even turn it completely off, including the vibration cadence. However, this is not allowed for the Level 1 messages.

## **Annex H: Canadian Wireless Public Alerting Service (WPAS)**

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(informative)

This informative annex describes the requirements of WPAS and compares it to CMAS.

WPAS mobile device behavior is specified in ATIS-0700021 [Ref 6]. The WPAS behaviors described in that specification supplement the J-STD-100 and J-STD-100.a CMAS Mobile Device Behavior Specification [Ref 3 & Ref 7]. ATIS-0700021 [Ref 6] describes the differences between WPAS behavior and CMAS behavior for mobile devices.

As per ATIS-0700021 [Ref 6], the key differences between WPAS and CMAS are:

1. WPAS is designed for LTE devices only;
2. WPAS requires mandatory bilingual (English and French) language support;
3. WPAS will only employ the highest level non-opt out emergency messages (known as Presidential Alerts in WEA/CMAS) and;
4. WPAS requires the use of a Canadian specific cadence, alert tone, and alert banner to notify wireless users of alerts.

## Annex I: LT-Alert Description

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(informative)

This excerpted text describes the mobile device requirements of LT-Alert of Lithuania extracted from a working draft:

*Regional requirements require the Warning Notifications to be broadcasted in multiple languages:*

- *Local language – Lithuanian (UCS2 encoding);*
- *Additional languages: English (GSM-7 bit encoding), Russian (UCS2 encoding).*

*Future goal is to use Message Identifiers from the range 4352 – 6399 for LT-Alert notifications, but since current adoption of WEA functionality among mobile handsets in Lithuania isn't perfect, Warning Notification Provider uses Message Identifiers 525 (English), 578 (Lithuanian) and 605 (Russian) in parallel.*

*WEA compliant mobile handsets shall be configured to receive all messages with MIs in the ranges 4370-4379 (Lithuanian) and 4383-4392 (Russian and English). Optional Message Identifiers 578, 525 and 605 should be used for non-WEA compliant mobile handsets and configurable via MMI, but are not required to be preconfigured.*

Other mobile device behavior, such as ringtone and display of an LT-Alert message, are compatible with CMAS.

## Annex J: EMA Description

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(informative)

The Ministry of Civil Defense and Emergency Management (MCDEM) in New Zealand operates the Emergency Mobile Alert (EMA) service.

Details of the service can be found on their website: <https://www.civildefence.govt.nz/get-ready/civil-defence-emergency-management-alerts-and-warnings/emergency-mobile-alert/>.

This website contains the MCDEM director's statement on EMA, which defines the mobile device standards for EMA:

- All suppliers of mobile devices marketed in New Zealand need to enable CB on new and supported mobile devices in New Zealand.
- The standard is based on 3GPP standards for Cell Broadcast and on ATIS/TIA-J-STD-100 with the following characteristics:
  - o "Presidential Alert" is renamed to "Emergency Alert"
  - o EMA uses only Message Identifier 4370
  - o The maximum message length is 10 CB pages with 93 English characters (GSM 7-bit) on each CB page
  - o Phone numbers and URLs shall be allowed to be included in alert messages
  - o The device must display a time-stamp for the receipt of the message

The device must display an indicator if the alert has not been acknowledged by the user

# Annex K: UAE-Alert Description

(informative)

This informative annex describes the requirements of the United Arab Emirates' National Public Warning System (UAE-Alert). The National Emergency Crisis and Disasters Management Authority (NCEMA) in UAE regulates and operates the National Public Warning Service (UAE-Alert).

The Telecommunications Regulatory Authority (TRA) mandated the implementation of UAE-Alert requirements through issuing a technical specification TS040 dated January 1, 2016. TS040 mandates that all mobile devices imported and sold in the UAE shall have CB enabled on new and supported mobile devices. Mobile device behaviors such as ringtone, vibration and display of an UAE-Alert warning are compatible with WEA.

Further details of the requirements are published on TRA's website at: <https://www.tra.gov.ae/en/about-tra/telecommunication-sector/type-approval/details.aspx#description>.

The Primary Block MID range of 4370-4382, 4396 and 4398 will be used for Arabic language messages broadcasts and the MID range of 4383-4395, 4397 and 4399 has been assigned to foreign languages broadcasts.

NOTE: Messages in Arabic and English language will be broadcast with Message Identifiers in the Primary Block until further notice, subject to availability of mobile devices that support MIDs for foreign languages.

The requirements in TS040 deviate to some extent from the requirements as specified in ATIS-0700036.v002 [Ref 8]:

- No opt-out for Imminent Threats and Exercise messages;
- Override of volume setting on the mobile device.

The mapping onto Message Identifiers (Cell Broadcast Information columns) occurs through the Alert Class identification (UAE-Alert Information columns) as follows:

**Table K.1 – Parameter Mapping**

Optional	Mandatory	Mandatory	Mandatory	Mandatory						Mandatory	Mandatory	
Show the class Banner(s)/Title(s) in the setting menu	Notifications/Settings Banner(s)/Title(s)	Popup Banner(s)/Title(s)	Enabled by Default?	Ability to Disable by the user?	السلوك Behavior						Channel ID (Secondary Language)	Channel ID (Primary Language)
					المشاهدة	الصوت Sound		الاهتزاز Vibration	ملاحظات Notes			
عرض عنوان الفئة في صفحة الإعدادات	عنوان صفحة الإعدادات	عنوان صفحة عرض الرسالة	حالة التفعيل	يمكن للمستخدم من تفعيل إلغاء استقبال الرسائل.	Pop up alert on screen	المدة (ثانية) Duration(sound)	النوع Type	الاشتراطات Mute mode Requirements	الاهتزاز Vibration	ملاحظات Notes	القناة الثانوية (اللغة الثانية)	القناة الرئيسية (اللغة الرئيسية)
Hidden	الرسائل التحذيرية الوطنية National Emergency Alerts	تصدير طوارئ وطني National Emergency Alert	Yes	No	Yes	Between Minimum 10.5 seconds & Maximum 32.5 seconds	Audio signal	(Even if mute mode)	Yes	Discard the alert by acknowledgement	4383	4370
Hidden	الرسائل التحذيرية الطارئة Emergency Alerts	تصدير طوارئ Emergency Alert	Yes	No	Yes	10.5	Audio signal	(Even if mute mode)	Yes	Discard the alert by acknowledgement	4384	4371
Hidden	الرسائل التحذيرية الطارئة Emergency Alerts	تصدير طوارئ Emergency Alert	Yes	No	Yes	10.5	Audio signal	(Even if mute mode)	Yes	Discard the alert by acknowledgement	4385	4372
Hidden	الرسائل التحذيرية الطارئة Emergency Alerts	تصدير طوارئ Emergency Alert	Yes	No	Yes	10.5	Audio signal	(Even if mute mode)	Yes	Discard the alert by acknowledgement	4386	4373
Hidden	الرسائل التحذيرية الطارئة Emergency Alerts	تصدير طوارئ Emergency Alert	Yes	No	Yes	10.5	Audio signal	(Even if mute mode)	Yes	Discard the alert by acknowledgement	4387	4374
Hidden	الرسائل التحذيرية الطارئة Emergency Alerts	تصدير طوارئ Emergency Alert	Yes	No	Yes	10.5	Audio signal	(Even if mute mode)	Yes	Discard the alert by acknowledgement	4388	4375
Hidden	الرسائل التحذيرية الطارئة Emergency Alerts	تصدير طوارئ Emergency Alert	Yes	No	Yes	10.5	Audio signal	(Even if mute mode)	Yes	Discard the alert by acknowledgement	4389	4376
Hidden	الرسائل التحذيرية الطارئة Emergency Alerts	تصدير طوارئ Emergency Alert	Yes	No	Yes	10.5	Audio signal	(Even if mute mode)	Yes	Discard the alert by acknowledgement	4390	4377
Hidden	الرسائل التحذيرية الطارئة Emergency Alerts	تصدير طوارئ Emergency Alert	Yes	No	Yes	10.5	Audio signal	(Even if mute mode)	Yes	Discard the alert by acknowledgement	4391	4378
Displayed	الرسائل التحذيرية Warning Alerts	رسائل تحذيرية Warning Alert	Yes	Yes	Yes	Between Minimum 5 seconds & Maximum 10.5 seconds	Audio signal OR whistling tone	(Sound in Mute Mode is not required)	Yes	Discard the alert by acknowledgement	4392	4379
Displayed	الرسالة التحذيرية Test Alerts	رسالة تحذيرية Test Alert	No	Yes	Yes	10.5	Simple Tone (Similar to SMS) OR Audio Signal	(Sound in Mute Mode is not required)	No OR Yes	No Action By User OR Discard the alert by acknowledgement	4393	4380
Hidden	تمارين Exercises	تمارين Exercise	Yes	No	Yes	10.5	Audio signal OR whistling tone	(Even if mute mode)	Yes	Discard the alert by acknowledgement	4394	4381

## Annex L: RO-Alert Description

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(informative)

This informative annex describes the requirements of the public warning system RO-Alert, which is operated by the Special Telecommunications Service in Romania. The legislative background is Government Emergency Ordinance no. 72/201<sup>8</sup>.

All details can be found on a dedicated website: <https://www.sts.ro/en/ro-alert>.

Mobile device requirements can be found here: [https://ro-alert.ro/wp-content/uploads/2019/07/RO-ALERT-Mobile-phones-requirements-RO-ALERT-portal\\_ENG.pdf](https://ro-alert.ro/wp-content/uploads/2019/07/RO-ALERT-Mobile-phones-requirements-RO-ALERT-portal_ENG.pdf)

These requirements are to a large extent based on WEA or EU-Alert, with the following deviations:

1 - The use of Message Identifiers is as follows:

- 4370 (EU-Alert) and 919 (GSMA) – Presidential Alert;
- 4371 (EU-Alert) and 919 (GSMA) – Extreme Alert;
- 4375 (EU-Alert) and 918 (GSMA) – Severe Alert;
- 4379 (EU-Alert) and 917 (GSMA) – Orange Alert;
- 4381 (EU-Alert) and 916 (GSMA) – Exercise Alert;

All levels will be activated by default in the standard configuration of mobile phones, giving the user the option of deactivating later the reception of these types of alert messages.

2 - The order of alert messages will be from the most recent to the oldest according to LIFO (Last In First Out) principle. New alert messages will be displayed first, even if the user did not notice the older alert messages. WEA compatible mobile devices allow this behavior, but do not require it (see ATIS-0700036.v002 [Ref 8]).

3 – Duplication detection duration is at least 180 minutes, during which new messages with the same Serial Number and Message Identifier should be considered duplicates.

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<sup>8</sup><https://www.sts.ro/files/userfiles/112/Informare%20Publica/ORDONAN%C8%9A%C4%82%20DE%20%20URGEN%C8%9A%C4%82%20privind%20operarea%20Sistemului%20de%20avertizare%20a%20popula%C8%9Biei%20%C3%AEn%20situa%C8%9Bii%20de%20urgen%C8%9B%C4%83%20RO-ALERT.pdf>