



ATIS-0700049

ATIS Standard on -

WEA 3.0 Practical Hints for Alert Originators



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WEA 3.0 Practical Hints for Alert Originators

Alliance for Telecommunications Industry Solutions

Approved August 18, 2021

Abstract

This standard provides practical information to WEA Alert Originators about the handling and application of information included in WEA Alerts and illustrates how this information may impact WEA recipients.

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:

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Preface

The Commercial Mobile Service Providers (CMSPs) referenced in this document are Participating CMSPs per the Federal Communications Commission (FCC) definition described in ATIS-0700035, *Wireless Emergency Alert (3.0) Service Description* [Ref 2]. All references to CMSPs in this specification refer to Participating CMSPs.

1 Scope, Purpose, & Application

1.1 Scope

The scope is Wireless Emergency Alert (WEA) message delivery in a WEA 3.0 environment.

1.2 Purpose

The purpose of the present document is to provide Alert Originators (AOs) a better understanding of the impact their WEA message input (i.e., choice of alert message fields and the content of those fields) has upon WEA message delivery and the alert recipients.

1.3 Application

The application is WEA message delivery from the perspective of the Alert Originator.

2 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] 3GPP TS 23.038, *3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Alphabets and Language-Specific Information*.¹

[Ref 2] ATIS-0700035.v002, *Enhanced Wireless Emergency Alert (WEA) 3.0 Service Description*.²

[Ref 3] Common Alerting Protocol Version 1.2³

[Ref 4] NWS Instruction 10-1712, All Hazards Specific Area Message Encoding (SAME)⁴

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

² This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) at: < www.atis.org >.

³ This document is available from the Organization for the Advancement of Structured Information Standards (OASIS) can be obtained at: < <https://www.oasis-open.org/standards/> >.

⁴ This document is available from the National Oceanic and Atmospheric Administration National Weather Service (NOAA NWS) at: < <https://www.nws.noaa.gov/directives/> >.

3 Definitions, Acronyms, & Abbreviations

3.1 Definitions

In the following definitions, the term “alert” refers to a new alert or an update to a previous alert.

Alert Area	Alert Area represents the area specified by the Alert Originators for an alert. An alert may have multiple Alert Area instances. Each instance of an Alert Area shall have an area description, at least one geo-code, and optionally, one or more shapes (polygons or circles).
Area Element	Area Element refers to the CAP specification <area> element which describes a geographic area. Textual and coded descriptions are supported, but geospatial shapes (polygons and circles) are preferred. [Ref 5]
Broadcast Area	Broadcast Area represents the area (cells/sectors) selected for the broadcast based on the Alert Area. Broadcast Area may vary by wireless operator cell/sector selection and coverage.
Undershoot	Broadcast Area does not cover 100% of the Alert Area.
Overshoot	Broadcast Area includes coverage beyond the Alert Area.

3.2 Acronyms & Abbreviations

3GPP	3 rd Generation Partnership Project
AO	Alert Originator
AOP	Alert Originator Platform
ATIS	Alliance for Telecommunications Industry Solutions
CAP	Common Alerting Protocol
CMSP	Commercial Mobile Service Provider
DBGF	Device-Based Geo-Fencing
EEW	Earthquake Early Warning
FCC	Federal Communications Commission
GSM	Global System for Mobile Communications
HTML	HyperText Markup Language
IPAWS	Integrated Public Alert and Warning System
SAME	Specific Area Message Encoding
URL	Uniform Resource Locator
USGS	United States Geological Survey
WEA	Wireless Emergency Alert

⁵ This document is available from the Organization for the Advancement of Structured Information Standards (OASIS) at: < <http://www.oasis-open.org/specs/index.php> >.

4 Executive Summary Listing of Practical Hints in This Document

This clause provides a list of all Practical Hints in this document, each including a reference to the related clause with additional information. Each hint is labelled as being applicable to Alert Originators, Alert Originator Platforms (AOPs), or both.

1. Practical Hint: All Hazards Specific Area Message Encoding (SAME) geocodes using county subdivisions are not supported by the CMSPs. [AO and AOP; Clause 6.1.2]
2. Practical Hint: In order to enable Device-Based Geo-Fencing (DBGF) for an alert, the AO must provide coordinates defining at least one shape as part of the Area Element. If no shape is provided in the Area Element (i.e., only one or more geocodes are included), DBGF cannot be performed. [AO and AOP; Clause 6.2]
3. Practical Hint: In order to avoid the potential presentation of multiple instances of an alert to the users, it is preferable to define the full Alert Area in a single alert when practical and when allowed under the 10 shapes/100 coordinates limit. [AO and AOP; Clause 6.3]
4. Practical Hint: Geocodes that specify the state should not be used when county geocodes would suffice [e.g., would fully cover the included shape(s)]. [AO and AOP; Clause 6.4]
5. Practical Hint: Include geocodes as required to fully cover all included shape(s). [AO and AOP; Clause 6.4.1]
6. Practical Hint: Only specify the geocodes that overlap or cover the defined shape (polygon or circle) specified in the Alert Area. [AO and AOP; Clause 6.4.1]
7. Practical Hint: Alerts that have multiple Area Elements must have shapes in each Area Element or no shapes in any Area Element. (AO and AOP; Clause 6.4.2)
8. Practical Hint: Alert Areas should be defined solely based on the Alert Originator's knowledge of the event, and the boundaries within which all mobile device users may benefit (e.g., imminent danger) or may benefit others (e.g., AMBER alert). No factors with regard to expectations of processing by the CMSP network or the mobile devices should impact the Alert Area definition. [AO and AOP; Clause 6.5]
9. Practical Hint: When initiating an alert that triggers DBGF and which has a lifespan of many hours, the Alert Originator should be aware of the possibility of perceptible battery impacts to the WEA 3.0 mobile devices receiving the broadcast. [AO; Clause 6.6]
10. Practical Hint: When sending a state-wide alert, use only the geocode for the state. Do not include shapes to trigger DBGF for a state-wide alert. [AO; Clause 6.7]
11. Practical Hint: In order to enable the DBGF Bypass for a time-critical alert, the Alert Originator may include an explicit "DBGF bypass" indicator with the alert. This allows the sending of one or more shapes which refine the Alert Area, while avoiding the latency associated with DBGF. NOTE: As of the time of the publication of this document, the FCC has provided authorization to use the DBGF Bypass only to United States Geological Survey (USGS) for Earthquake Early Warning (EEW) alerts. [AO and AOP; Clause 6.8]

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12. Practical Hint: Text messages should be checked for compliance with the GSM 7-bit alphabet. Alert Originators should be aware of impacts that may occur during encoding of the alert message due to possible lack of support for certain punctuation marks or characters. [AO and AOP, Clause 7.1]
13. Practical Hint: Always include English 90 in alerts. Including English 360 is highly encouraged. If including Spanish, always include Spanish 90. Including Spanish 360 is highly encouraged. [AO and AOP; Clause 7.2]
14. Practical Hint: Alert originators should not include more than four places past the decimal when specifying latitude and longitude coordinates. [AO and AOP; Clause 7.3]
15. Practical Hint: Although Uniform Resource Locators (URLs) in WEA messages are beneficial in some scenarios, they must be included cautiously and created with care in order to limit unintended consequences. Data traffic surges can have side effects that may impact other emergency priority communication services. [AO and AOP; Clause 7.4]
16. Practical Hint: When composing an alert that will include a URL, make sure the alert text provides all essential information. Never send a URL with no accompanying alert text. [AO and AOP; Clause 7.4]
17. Practical Hint: Provide a specific text description of the Alert Area within a WEA message rather than saying “in this area” to mitigate the negative effects to a user receiving an alert when they are outside the intended Alert Area. [AO and AOP; Clause 7.5]
18. Practical Hint: Cancelling a WEA alert stops any further broadcast of that alert, but it does not inform users of the cancellation. [AO; Clause 8.1.2]
19. Practical Hints: [AO; Clause 8.1.3]
 - Updating a WEA alert both stops further broadcast of the associated alert (if still active) and starts the broadcast of a replacement alert with updated information.
 - If the values of the severity or urgency parameters have changed between the original Alert and the updated alert, it is possible that the device may present only one or the other based on user settings on the device.
20. Practical Hint: When it is critical to immediately stop the broadcast of an alert (e.g., a mistaken alert was previously sent), a Cancel message may be used to quickly stop the broadcast of the alert in the mobile network. Then, if needed, a new alert can be created to convey to the public that the previous alert was cancelled. Alternatively, if the text of a new alert is “ready to go” when a currently broadcasting alert is to be cancelled, an Update message may be used which cancels the broadcasting alert and begins the broadcast of the new content in the Update. If there is no need to inform the public about the cancellation of a particular alert, then a Cancel message can be issued with no need to send a follow-up alert. [AO; Clause 8.2]
21. Practical Hint: The mobile network does not create and broadcast any message to notify the users that the alert has expired. It may be helpful to include the expected expiration time in the alert text [AO; Clause 8.3]
22. Practical Hints: [AO; Clause 8.4]
 - When sending an Update message, bear in mind that some of the original recipients may no longer be in the original Alert Area and will not receive the alert.

- Alert Update messages should be written to provide complete and comprehensible information by themselves, without relying on recipients' having received prior messages.

23. Practical Hint: Use State/Local Test for WEA test alerts. Use the word "Test" in the alert text of any WEA test alerts. [AO and AOP; Clause 9]

5 Overview of WEA 3.0

Alert scenarios described throughout this document assume that the mobile device user settings are configured to present the alert.

Prior to WEA 3.0, there was only one process within the CMSP network to affect the presentation of an alert on a mobile device based on its location, referred to as Network-Based Geo-Targeting. Network-Based Geo-Targeting is the process of performing cell/sector selection for the broadcast with the idea of attempting to match the Broadcast Area as closely as possible to the Alert Area (i.e., targeted area defined by the Alert Originator), with the premise that this cannot be exact as the cell/sector coverage boundaries do not match the Alert Area boundaries. Any mobile device receiving the alert would then present the alert.

The mismatch between the cell sector broadcast boundaries and the Alert Area boundaries may result in both overshoot and undershoot in the field, meaning that some mobile devices inside the Alert Area may not receive the broadcast (undershoot) and some mobile devices outside the Alert Area may receive the broadcast (overshoot).

Overshoot may now be addressed through the addition of WEA 3.0 DBGF, which supports the capability of a mobile device receiving the alert to check its location against the Alert Area. If the mobile device receiving the alert is WEA 3.0 capable and is outside of the Alert Area, the alert will not be presented.⁶ Mobile devices not capable of performing DBGF will default to presenting the alert when received.

A WEA 3.0 mobile device performs the location comparison by using coordinates included in the broadcast from the network. These coordinates are received when the Alert Originator sends them to define an Alert Area shape (polygon or circle). If no coordinates are sent because the Alert Area is defined only by one or more geocodes, the mobile device will not receive coordinates and will simply present the alert without checking its location.

In the figure below, the blue polygon represents the Alert Area. Algorithms for choosing the cells/sectors for broadcasting the alert may vary. One possible selection for the Broadcast Area is represented by the pink shaded area in this figure.

- 1) If all of these mobile devices are WEA 3.0 capable and DBGF is active for an incoming alert, only the red mobile devices should present the alert.
- 2) If the mobile devices are not WEA 3.0 capable, both the red and grey mobile devices will present the alert, with the presentation by the grey mobile devices being the result of overshoot.

The black mobile is outside the Broadcast Area and will not receive the alert.

⁶ Note that the FCC Requirements allow presentation up to 0.1 miles outside the boundary of an Alert Area defined by coordinates.

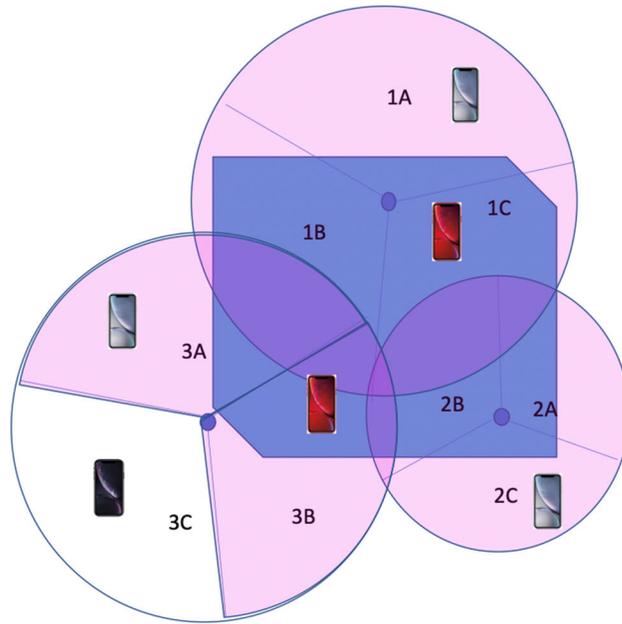


Figure 1 – Device-Based Geo-Fencing

DBGF can only be performed if the current location can be obtained. If the mobile device has location services turned off, or for any other reason is unable to obtain its location at the time the alert is received, the mobile device will default to presenting the alert.

There are clauses in this document that further discuss the information required to be sent as part of the alert by the Alert Originator to be used by the CMSP network to support DBGF.

Please note that while market penetration of WEA 3.0 mobile devices is growing, many mobile devices receiving the alerts are not WEA 3.0 capable.

6 WEA Alert Area

6.1 Basic definition of Alert Area

An alert always includes the following:

- Alert Area Description
- One or more geo-codes
- Zero or more polygons
- Zero or more circles

6.1.1 Alert Area Description

The Alert Area Description is a free-format textual field which is only used for logging purposes in WEA.

6.1.2 Geocode

The contents of the geocode are defined in the Common Alerting Protocol (CAP) protocol [Ref 3]. The contents of the geocode include a "valueName," which for WEA is "SAME". The geocode element value contains six digits and represents a number (e.g., value="006113"). The format is defined in the National Weather Service Instruction 10-1712, All Hazards Specific Area Message Encoding (SAME) [Ref 4].

Practical Hint: SAME geocodes using county subdivisions are not supported by the CMSPs.

6.1.3 Polygons and Circles

Polygons and circles are the shapes that can be included in an Alert Area.

Polygons and circles may overlap, be adjacent, or be entirely separate for a single WEA message.

The total number of polygons and circles may not exceed 10 for a single WEA message.

The total number of coordinates for all polygons and centers of all circles may not exceed 100 for a single WEA message.

6.1.4 Alert Originator's Authorized Area

If an Alert Area lies outside the Alert Originator's authorized area for alerting it will be rejected by the Federal Alert Gateway.

6.2 Triggering of Device-Based Geo-Fencing (DBGF) for an Alert

The input sent by the Alert Originator determines whether DBGF is enabled for a given alert by the manner in which the Alert Area is described. If the Alert Originator describes the Alert Area by providing coordinates defining at least one shape as part of the Alert Area, the CMSPs will include those coordinates in the alert broadcast. When a mobile device that supports WEA 3.0 receives a broadcast alert that includes coordinates, the mobile device will perform DBGF by determining its location and presenting the alert to the user if the mobile device is within the Alert Area. If no coordinates defining a shape are provided in the Alert Area description, DBGF cannot be performed for that particular alert and all mobile devices that receive the alert will present the alert to the user regardless of their location.

Mobile devices that do not support WEA 3.0 will present any broadcast alert they receive regardless of their location as they are not able to recognize or process any broadcast coordinates.

Practical Hint: In order to enable DBGF for an alert, the Alert Originator must provide coordinates defining at least one shape as part of the Area Element. If no shape is provided in the Area Element (i.e., only one or more geocodes are included), DBGF cannot be performed.

6.3 Minimizing Number of Alerts for a Single Event

In order to avoid the potential presentation of duplicate alerts to the users, it is preferable to define the full Alert Area in a single alert when practical. If an Alert Originator splits an alert into two or more alerts with adjoining Alert Areas, each of those alerts will be broadcast separately with the associated coordinates. Mobile devices on or near the common boundary of the adjoining areas are likely to receive both alerts and present them separately to the user.

Practical Hint: In order to avoid the potential presentation of multiple instances of an alert to the users, it is preferable to define the full Alert Area in a single alert when practical and when allowed under the 10 shapes/100 coordinates limit.



Figure 2 – Broadcast Areas may overlap for adjacent Alert Areas

6.4 Cell/Sector Selection derived from Geocodes and Shapes

Geocodes should be chosen to ensure that any included shapes are covered, but should not unnecessarily extend beyond that needed coverage. Some CMSP algorithms for determining the Broadcast Area (cell/sector selection) use the total coverage of the geocodes as a starting point. In other words, the superset of cells/sectors covered by the full set of geocodes associated with an alert will be used as the starting list, to be whittled down to a smaller set of cells/sectors which cover the Alert Area if defined as a shape.

The inclusion of additional geocodes that do not overlap any of the polygon may extend processing time. This also applies to the use of a larger geocode than required, such as the use of a state geocode when a county geocode would have sufficed to entirely cover the included shape(s). If too few geocodes are included to fully cover the included shape(s), the resulting cell/sector selection may not include the portions of the shape(s) not covered by the geocodes.

Practical Hint: Geocodes that specify the state should not be used when county geocodes would suffice [e.g., would fully cover the included shape(s)].

6.4.1 Shapes spread across multiple geo-codes

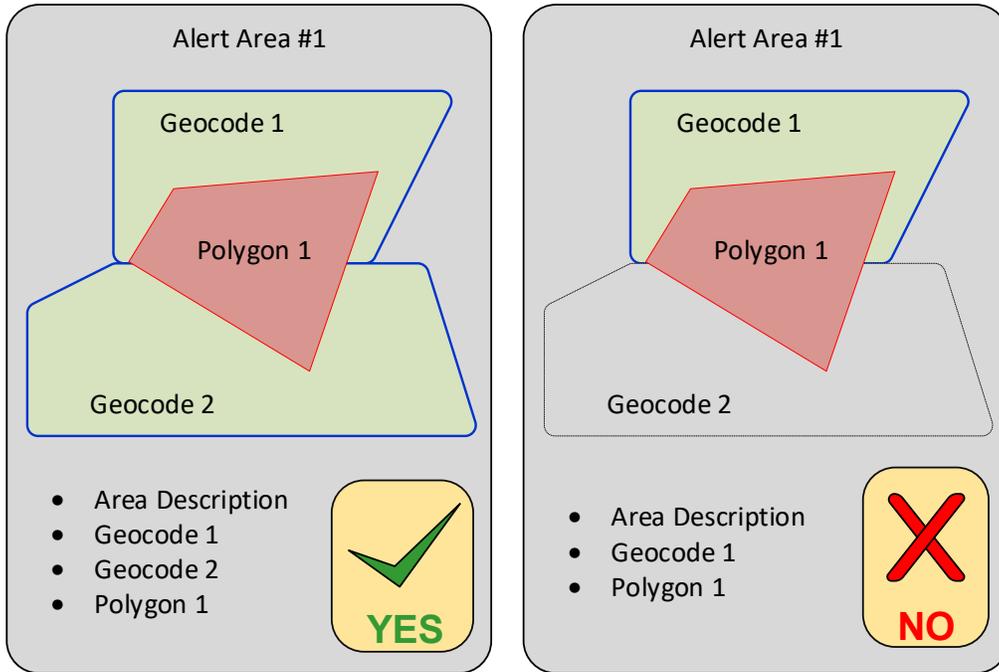


Figure 3 – Specify all the geo-codes that cover the specified shape(s)

Include geocodes that cover the entirety of all shape(s) (polygon or circle) specified in the Alert Area. Otherwise, any portion of the shape(s) not covered by a geocode may not receive the broadcast.

Practical Hint: Include geocodes as required to fully cover all included shape(s).

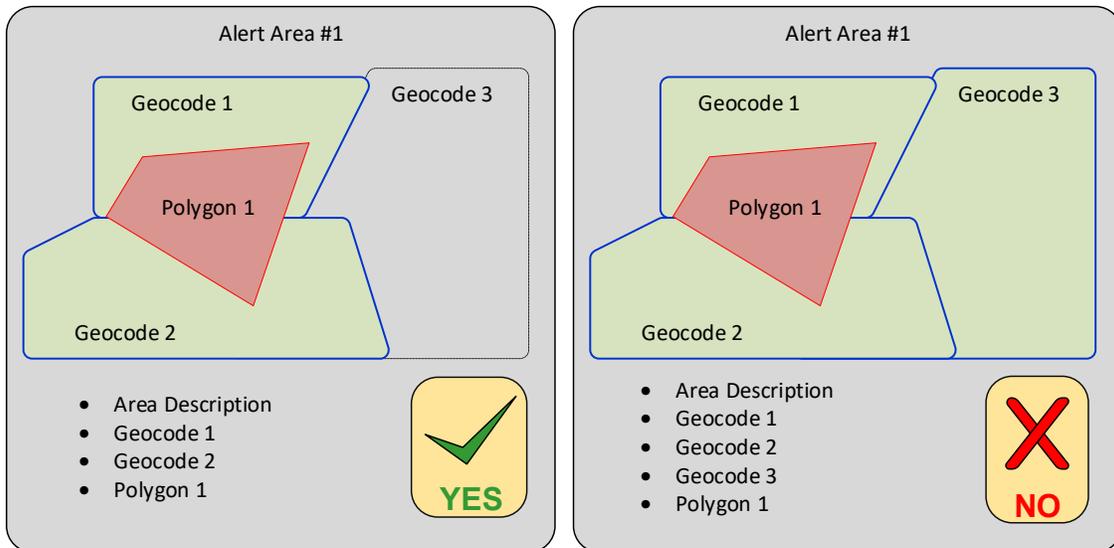


Figure 4 – Specify only geocodes only that overlap with the specified shape(s)

Only specify the geo-codes that overlap or cover the defined shape (polygon or circle) specified in the Alert Area.

Practical Hint: Only specify the geocodes that overlap or cover the defined shape (polygon or circle) specified in the Alert Area.

6.4.2 Multiple Alert Areas

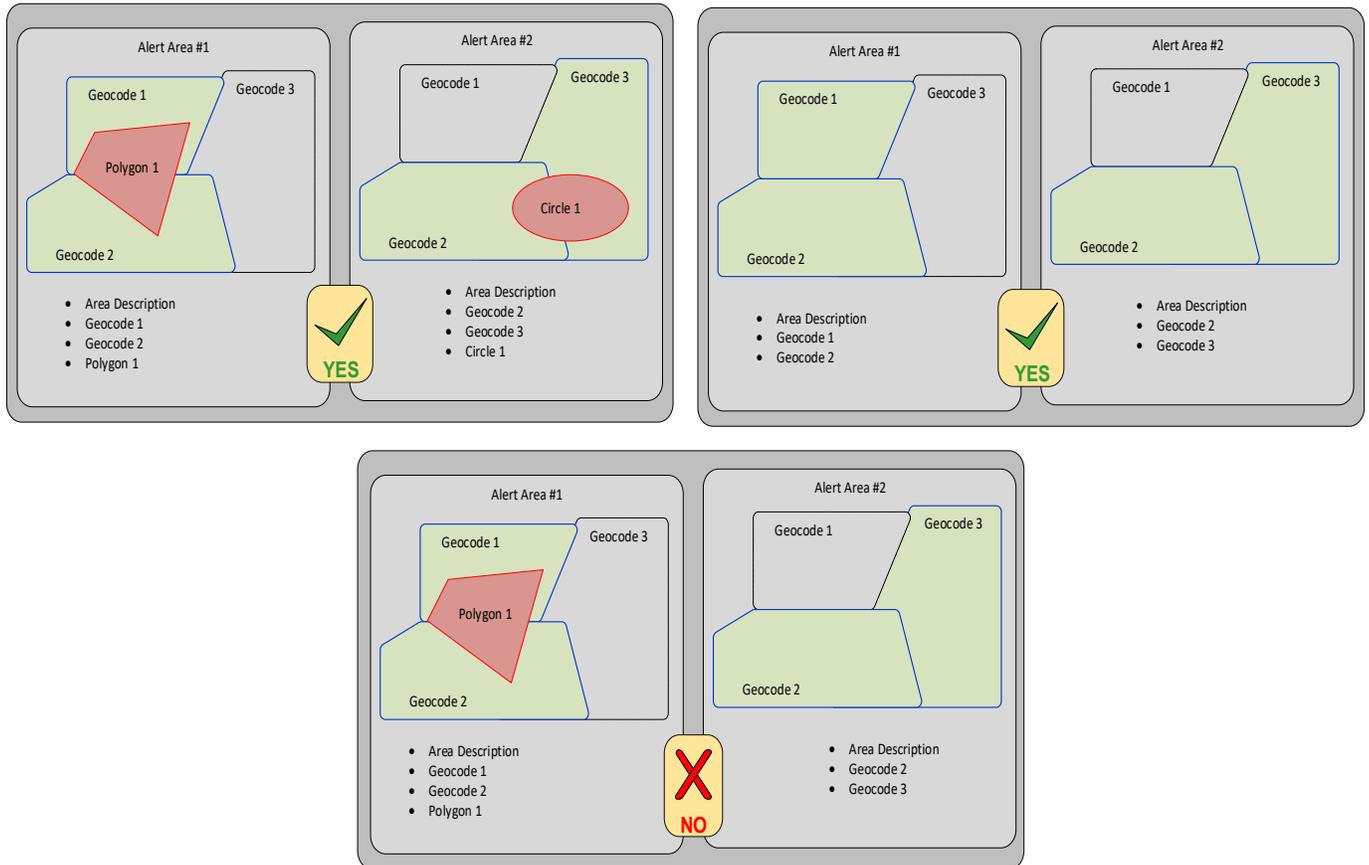


Figure 5 – Mixed Area Element types are not allowed

Alerts should never be constructed with “mixed” Area Element types—some elements carrying shapes and others not. Otherwise, inconsistent alert delivery may result.

Practical Hint: Alerts that have multiple Area Elements must have shapes in each Area Element or no shapes in any Area Element.

6.5 Specify the Needed Alert Area

The Overview of WEA 3.0 in this document explains that the boundaries of the cell/sector broadcast do not match the Alert Area boundaries, and how this results in overshoot. WEA 3.0 introduced DBGF, which mitigates overshoot by allowing mobile devices to participate in the determination of whether or not to present an alert to the user based on whether the device-determined location indicates that the mobile device is in the Alert Area. Alert Originators should keep in mind, however, that significant market penetration of new mobile device functionality takes a number of years. This means that for some time, the overshoot of the broadcast beyond the Alert Area boundaries will continue to result in non-WEA 3.0 mobile devices proceeding with presentation of the alert. Presentation of the

alert will also occur for any WEA 3.0 mobile device unable to obtain location for any reason (e.g., location turned off) at the time an alert is received.

Alert Areas should be defined solely based on the Alert Originator's knowledge of the event, and the boundaries within which all mobile device users may benefit (e.g., imminent danger) or may benefit others (e.g., AMBER alert), and need to be made aware of the information being conveyed by the alert. Modification of the Alert Area boundaries based on expectations about possible overshoot or expected mitigation of overshoot through the use of DBGF is strongly discouraged and may have more significant or different impacts than intended.

Practical Hint: Alert Areas should be defined solely based on the Alert Originator's knowledge of the event, and the boundaries within which all mobile device users may benefit (e.g., imminent danger) or may benefit others (e.g., AMBER alert). No factors with regard to expectations of processing by the CMSP networks or the mobile devices should impact the Alert Area definition.

6.6 Mobile Device Battery Considerations when using DBGF

DBGF allows for the presentation of WEA alerts only when WEA 3.0 mobile devices are inside the Alert Area. This is a useful targeting tool for reducing the number of devices in the field outside the Alert Area that may present the alert; however, it should be noted that there are impacts to mobile device battery life associated with the DBGF process. These impacts will apply to all WEA 3.0 mobile devices in the Broadcast Area for the alert. This should be taken into consideration particularly for alerts associated with a lifespan of many hours, as the battery impacts continue throughout the lifespan of the alert.

Practical Hint: When initiating an alert that triggers DBGF and which has a lifespan of many hours, the Alert Originator should be aware of the possibility of perceptible battery impacts to the WEA 3.0 mobile devices receiving the broadcast.

6.7 DBGF is Discouraged for Statewide Alerts

When an alert requires DBGF, coordinates are broadcast over the air to the mobile device, which adds latency to the alert dissemination. In addition, any WEA 3.0 mobile devices receiving that alert and not already in the process of retrieving location will need to trigger location acquisition processes, potentially impacting network capacity and definitively impacting mobile device battery life in every WEA 3.0 mobile device. For statewide alerts, these impacts will occur for WEA 3.0 mobile devices throughout the state and those covered by the portion of the broadcast overshooting any state boundaries.

For these reasons, it is strongly recommended that no alerts meant for state-wide dissemination include a shape outlining the state, or several shapes effectively filling the state, in order to trigger DBGF. Instead, inclusion of a state geocode with no shape, which will not trigger DBGF, is recommended.

NOTE: Alert Originators should be aware that a consequence of using only a geocode for a statewide alert is overshooting state boundaries. The extent of overshoot will depend on multiple factors (e.g., cell tower locations, population centers, propagation) varying by state.

Practical Hint: When sending a state-wide alert, use only the geocode for the state. Do not include shapes to trigger DBGF for a state-wide alert.

6.8 Bypassing DBGF for Time Critical Alerts

CMSPs support a capability known as "DBGF bypass" for WEA alerts. If a CMSP receives a DBGF Bypass indicator in an alert, the operator will broadcast the alert without sending coordinates associated with the Alert Area whether or not shapes are included in the Alert Area. Whether or not a device supports WEA 3.0, the device will present the alert to the user immediately.

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The DBGF Bypass is a useful tool for Alert Originators with time-critical alerts [e.g., USGS-generated Earthquake Early Warning (EEW) alerts], as this will avoid the latency associated with:

- broadcasting the coordinates to the mobile device,
- mobile device location acquisition, and
- comparison against the Alert Area.

The DBGF Bypass allows the Alert Originator to refine the Alert Area through the use of one or more shapes, while avoiding the latency associated with DBGF.

Bypassing DBGF removes the requirement of any WEA 3.0 mobile device to determine its location with respect to the Alert Area. An Alert Originator sending the DBGF Bypass with an alert should be aware that the instances of presentation of the alert outside the Alert Area will increase for that alert.

The FCC has provided a waiver to allow CMSPs to not perform DBGF when shapes are received with the alert if the DBGF Bypass is received from USGS. At the time of publication of this document, no additional waivers have been provided. Upon receipt of an alert which includes a DBGF Bypass indicator, Integrated Public Alert and Warning System (IPAWS) will forward the alert to the CMSPs only if the sending Alert Originator is authorized, via an FCC waiver, to use the DBGF Bypass.

Practical Hint: In order to enable the DBGF Bypass for a time-critical alert, the Alert Originator may include an explicit “DBGF bypass” indicator with the alert. This allows the sending of one or more shapes which refine the Alert Area, while avoiding the latency associated with DBGF. NOTE: As of the time of the publication of this document, the FCC has provided authorization to use the DBGF Bypass only to USGS for EEW alerts.⁷

7 Alert Content

7.1 Alert Text Character Set

WEA messages on the mobile device are encoded in the GSM 7-bit alphabet [Ref 1] which includes only 127 characters. If a character that is not in the GSM 7-bit alphabet is included in the message text the message may be garbled. This is particularly likely for non-English language messages. For example, the GSM 7-bit alphabet does not support many Spanish punctuation marks or characters with accents or tildes.

Practical Hint: Text messages should be checked for compliance with the GSM 7-bit alphabet. Alert Originators should be aware of impacts that may occur during encoding of the alert message due to possible lack of support for certain punctuation marks or characters.

7.2 Alert Originator Support of English and Spanish

The English text is required to be presented. If indicated by user settings, the Spanish text will also be displayed.

The English 90 and English 360 fields are required by the CMSP Gateway. The CMSP Gateway requires both the Spanish 90 and Spanish 360 if Spanish is included.

The English 90 is required at the Federal Alert Gateway, and the three fields of Spanish 90, Spanish 360, and English 360 are optional, but the Federal Gateway will duplicate text fields as needed to fill in the fields required by the CMSP Gateway in order to avoid rejection of the alert. This is performed using the following duplication steps as needed: (also illustrated in tables below)

- Duplicating the English 90 into the English 360 if the English 360 is not received
- Duplicating the English 90 into the Spanish 90 if Spanish 360 is received but not Spanish 90
- Duplicating the Spanish 90 into the Spanish 360 if only Spanish 90 is received

⁷<https://www.fcc.gov/document/waiver-related-wea-alerts-us-geological-survey>

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Note that if duplication of the English 90 into the Spanish 90 is performed, this will result in having users with settings that allow Spanish presentation seeing two alerts presented, both in English, which is likely to frustrate the user. If including Spanish 360 text, include the appropriate Spanish 90 text.

Alert Originators are encouraged to include all four fields when possible, each with English or Spanish as appropriate.

Examples of how the alert text may be handled at the Federal Alert Gateway

English 90	FLASH FLOOD WARNING this area until 815AM EST.	FEMA ---->	English 90	FLASH FLOOD WARNING this area until 815AM EST.
English 360	(not included)	---->	English 360	FLASH FLOOD WARNING this area until 815AM EST.

Table 1 – English 90 duplicated in English 360

English 90	FLASH FLOOD WARNING this area until 815AM EST.	FEMA ---->	English 90	FLASH FLOOD WARNING this area until 815AM EST.
English 360	A FLASH FLOOD WARNING is in effect for this area until 815 AM EST. This is a dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under evacuation order.	---->	English 360	A FLASH FLOOD WARNING is in effect for this area until 815 AM EST. This is a dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under evacuation order. area.
Spanish 90	(Not included)	---->	Spanish 90	FLASH FLOOD WARNING this area until 815AM EST.
Spanish 360	Servicio Nacional de Meteorología: AVISO DE INUNDACIONES REPENTINAS en efecto para esta area hasta las 815 AM EST. Esta es una situacion peligrosa y amenaza la vida. No intente viajar a menos que sea para abandonar un area propensa a inundaciones o bajo una orden de desalojo.	---->	Spanish 360	Servicio Nacional de Meteorología: AVISO DE INUNDACIONES REPENTINAS en efecto para esta area hasta las 815 AM EST. Esta es una situacion peligrosa y amenaza la vida. No intente viajar a menos que sea para abandonar un area propensa a inundaciones o bajo una orden de desalojo.

Table 2 – English 90 substituted for Spanish 90

English 90	FLASH FLOOD WARNING this area until 815AM EST.	FEMA ---->	English 90	FLASH FLOOD WARNING this area until 815AM EST.
English 360	A FLASH FLOOD WARNING is in effect for this area until 815 AM EST. This is a dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under evacuation order. area.	---->	English 360	A FLASH FLOOD WARNING is in effect for this area until 815 AM EST. This is a dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under evacuation order. area.

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Spanish 90	AVISO DE INUNDACIONES REPENTINAS hasta 815 AM EST. Evite areas inundadas.	---->	Spanish 90	AVISO DE INUNDACIONES REPENTINAS hasta 815 AM EST. Evite areas inundadas.
Spanish 360	(Not included)	---->	Spanish 360	AVISO DE INUNDACIONES REPENTINAS hasta 815 AM EST. Evite areas inundadas.

Table 3 – Spanish 90 Duplicated into Spanish 360

Practical Hint: Always include English 90 in alerts. Including English 360 is highly encouraged. If including Spanish, always include Spanish 90, and including Spanish 360 is highly encouraged.

7.3 Precision of Latitude/Longitude Coordinates

The latitude and longitude coordinates defining the geometric shape, if provided, must be broadcast to mobile devices in order for them to perform the DBGF comparison. The ATIS WEA specifications were written with both the broadcast capacity and the needed precision of the coordinates in mind. WEA 3.0 supports latitude and longitude coordinates with a precision up to four decimal places. This equates to a precision of about 11 meters. Any numbers beyond the first four decimal places will not affect the outcome of the DBGF performed by the mobile device. Therefore, Alert Originators should not send coordinates that carry more than four digits following the decimal.

Practical Hint: Alert originators should not include more than four places past the decimal when specifying latitude and longitude coordinates.

7.4 WEA Embedded URLs

Internet links, also known as URLs, can enrich an alert with useful information. However, access to the link may fail (e.g., server or network congestion). The text of a WEA alert should be complete and actionable by itself and should not rely on a linked document to convey essential information. Messages with URLs but no text are particularly discouraged; if the link fails, the message becomes meaningless.

The embedded reference is clickable on some but not all mobile devices. Most devices which support clickable embedded references do not require "http://" at the beginning of the URL in order to make it clickable.

Embedded references CANNOT include HyperText Markup Language (HTML) which is otherwise used for telling a web browser how to display web content. WEA messages on the mobile device are encoded in the GSM 7-bit alphabet and there is no support for HTML tags.

The mobile device recognizes a sequence of three or more digits (e.g., 5558675309) as a phone number and makes this number a clickable link, even if this number is not a phone number. Spaces, brackets and dashes may not be recognized as phone numbers, as the recognition algorithm is device implementation specific. Sometimes only part of the number (e.g., up to the first space) is made clickable. If the user clicks the link the mobile device may ask if a voice call shall be established or if a message function shall be opened.

When an alert including a URL goes out, thousands of users may click that link within seconds. If an alert having only a URL with no accompanying text goes out, there is an even stronger chance that this will occur. That can create a concentrated surge of data requests and individual responses that may temporarily overload the mobile data network and impact other emergency priority communication services (e.g., Emergency and National Security / Emergency Preparedness) sharing that same mobile network. This may also overload the webserver that serves the URL.

URL characters are deducted one-for-one from the available text length of a WEA message. While short URLs are desirable, the use of automatic URL-shortening services should be avoided as it can create an additional risk of congestion at their referral servers.

Care should be taken not to embed URLs linking to a server that cannot handle a sudden high traffic load.

- Never send a URL without accompanying alert text.
- When writing an alert that will include a URL, make sure the alert text provides all the essential information and recommendations with or without the URL-linked information.
- Verify that URLs are correct and that the servers for them are working before including them in WEA messages.
- When preparing an information page to be linked to over WEA, minimize the total page data size; avoid unnecessary images and do not auto-play multimedia content.
- In preparation, ensure that the targeted servers have adequate capacity to withstand a sudden traffic surge.
- Pre-arrange concise URLs for web pages to which you plan to link.
- Automatic URL-shortening services should be avoided.

Practical Hint: Although URLs in WEA messages are beneficial in some scenarios, they must be included cautiously and created with care in order to limit unintended consequences. Data traffic surges can have side effects that may impact other emergency priority communication services.

Practical Hint: When composing an alert that will include a URL, make sure the alert text provides all essential information. Never send a URL with no accompanying alert text.

7.5 Include Meaningful Location Information

Many Alert Originators have included text to describe the Alert Area in a WEA message by including a phrase such as “in this area” in the text of the message. It is highly recommended that Alert Originators include a descriptive text statement (e.g., in southern Nevada west of Las Vegas) to identify the Alert Area to users receiving the message. This is particularly important in cases for which a user receives an alert while outside the intended Alert Area. If the user can easily figure out that they are not in the Alert Area described in the WEA message, they will be less likely to act on the information contained in the alert, as well as less likely to report a complaint about receiving an alert when they are outside the intended Alert Area.

Practical Hint: Provide a specific text description of the Alert Area within a WEA message rather than saying “in this area” to mitigate the negative effects to a user receiving an alert when they are outside the intended Alert Area.

8 WEA Message Management

8.1 Message Types

8.1.1 New WEA Message (Alert)

When an Alert Originator initiates a new WEA message broadcast, the mobile network will broadcast the message in the Alert Area and repeat the broadcast, referred to as a rebroadcast, at an interval that is determined by operator policy. Devices that do not receive the initial broadcast for any reason (e.g., outside broadcast area, poor coverage) may later receive a rebroadcast. Rebroadcast of a WEA message will continue at a rebroadcast interval until the message expires, until it is cancelled or updated by the Alert Originator, or until it is stopped by operator policy.

The maximum duration of an alert is 24 hours.

8.1.2 Cancelling a WEA Message (Cancel)

An Alert Originator may initiate a Cancel for the WEA message before the WEA message expiration time when the alert is no longer valid or applicable. When a Cancel is initiated, the alert rebroadcast, if still in progress, will be stopped. No cancellation indication is sent to the mobile devices.

Practical Hint: Cancelling a WEA message stops any further broadcast of that alert, but it does not inform users of the cancellation.

8.1.3 Updating a WEA Message (Update)

If the content of a WEA message is no longer valid or if details of the situation have changed and the general public needs to receive updated information, the Alert Originator may initiate an Update to the active WEA message.

Upon receiving the Update from the Alert Originator, the wireless networks will stop broadcasting the associated original alert (if still active) and will begin a new broadcast with the updated information. As with new alerts, an Update is limited in duration to 24 hours.

Some mobile devices provide settings that allow the user to opt out of alerts based on the severity and urgency values of the alert. If those values have changed between the original Alert and the updated alert, these filters may block one or the other, or both. For example, if the values of the severity and urgency parameters of the original WEA message produce a broadcast of an extreme level alert, but the severity and urgency values of the Update produce a severe level alert, a mobile device with the user settings configured to allow extreme alerts but opt out of severe alerts will present the original alert, but not the updated alert.

Practical Hint: Updating a WEA message both stops further broadcast of the associated alert (if still active) and starts the broadcast of a replacement alert with updated information.

Practical Hint: If the values of the severity or urgency parameters have changed between an original Alert and an Update to that alert, it is possible that the device may present only one or the other based on user settings on the device.

8.2 Considerations on Using Cancel Message Versus Update Message

The mobile network stops the periodic rebroadcast of a WEA message for which a Cancel message has been received. If the public needs to be informed of the cancellation of an alert, a new Alert message can be initiated to convey this information. Alternatively, instead of sending a Cancel message and then the new Alert message, an Update message can be sent which stops the rebroadcast of the associated active alert in the mobile network, then begins a broadcast of an alert with the content of the Update message.

Practical Hint: When it is critical to immediately stop the broadcast of an alert (e.g., a mistaken alert was previously sent), a Cancel message may be used to quickly stop the broadcast of the alert in the mobile network. Then, if needed, a new alert can be created to convey to the public that the previous alert was cancelled. Alternatively, if the text of a new alert is “ready to go” when a currently broadcasting alert is to be cancelled, an Update message may be used which cancels the broadcasting alert and begins the broadcast of the new content in the Update. If there is no need to inform the public about the cancellation of a particular alert, then a Cancel message can be issued with no need to send a follow-up alert.

8.3 Alert Expiration

The mobile network stops the rebroadcast of an alert according to the expiration element and does not create and broadcast any message to notify the users that the alert has expired.

Practical Hint: The mobile network does not create and broadcast any message to notify the users that the alert has expired. It may be helpful to include the expected expiration time in the alert text.

8.4 Mobility Considerations

The set of recipients for a WEA alert in the Broadcast Area has the potential for constant change. The change could be significant (e.g., decision of recipients of an imminent danger alert who decide to evacuate from the Alert Area), but mobility is always occurring to a greater or lesser extent in any geographic area. Alert Originators may wish to take this into account when determining actions to take subsequent to initiating an alert.

For example, updating information concerning an active alert, due to a need for correction or other reasons, may not be possible with all recipients of the original alert as some recipients may have subsequently moved out of the Broadcast Area.

There may also be mobile devices newly moving into the Broadcast Area who could then receive only the updated or new information, never having received the original alert. This possibility increases the need for new alert text to take into account users that never received the original text.

Practical Hints:

- When sending an Update message, bear in mind that some of the original recipients may no longer be in the original Alert Area and will not receive the alert. Alert Update messages should be written to provide complete and comprehensible information by themselves, without relying on recipients' having received prior messages.

9 State/Local WEA Test

When an Alert Originator has the need to initiate a WEA test, the Alert Originator should use a State/Local Test. Users may opt into receiving State/Local Tests via the device user settings. In order to avoid any misunderstanding, it is strongly recommended that the word "Test" be included in the alert message.

Practical Hint: Use State/Local Test for WEA test alerts. Use the word "Test" in the alert text of any WEA test alerts.

10 Documenting Concerns with WEA Reception

Following the dissemination of an alert, if WEA recipients perceive a problem with that dissemination, the Alert Originator may receive information directly from the public or become aware through social media and/or the news media.

Isolated consumer reports may be referred to the FCC website⁸ which has an extensive FAQ on WEA, as well as a Consumer Guide⁹. Incidents of widespread failure or repeated isolated incidents that show similarities (e.g., specific location, device make and model), establishing a discernable pattern, should be reported by the Alert Originator along with all pertinent information available which may assist in analyzing the incident.

10.1 Essential Information

When an Alert Originator is made aware of a WEA concern or complaint in the field, the details related to the occurrence are needed to assist the stakeholders to investigate and possibly reproduce the problem for verification. This may, in turn, assist in identifying the source. While there is no guarantee that the problem can be identified, the following substantive information, when available, should be collected to assist in the analysis:

- Full screen capture from the mobile device showing the WEA and time (these are only captured if the WEA was received)
- Cellular service provider, make, and model of the mobile device
- Software version of the mobile device
- Descriptive text detailing the problem as reported by the mobile device user
- Which WEA settings (e.g., alert category, such as AMBER, on/off) were enabled on the device at the time of the alert?
- Was Spanish language enabled?

⁸ <https://www.fcc.gov/consumers/guides/wireless-emergency-alerts-wea>

⁹ https://www.fcc.gov/sites/default/files/wireless_emergency_alerts_wea.pdf

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- What was the Location setting (on/off) on the device at the time of the alert?
- Address or nearby cross street of the mobile device at the time the problem was observed
- Was the device indoors or outdoors? Was the device in a vehicle?
- If known, were there other devices in the same location that presented the WEA correctly or had a similar issue?
- Contact information for the mobile device user if the user is willing to provide it

Anecdotal information should not be reported unless it is in addition to substantive information.

A. WEA Presentation Depends on Both the Mobile Device and Cell Network

A separate PDF file <Annex A-ATIS-0700049> has been electronically packaged with this ATIS Standard that provides a 2-page informative document entitled *WEA Presentation Depends on Both the Mobile Device and Cell Network*.