



**ATIS-0700041.v002**

ATIS Standard on -

**Wireless Emergency Alerts (WEA) 3.0  
Device-Based Geo-Fencing (DBFG)**



As a leading technology and solutions development organization, the Alliance for Telecommunications Industry Solutions (ATIS) brings together the top global ICT companies to advance the industry's most pressing business priorities. ATIS' nearly 200 member companies are currently working to address the All-IP transition, 5G, network functions virtualization, big data analytics, cloud services, device solutions, emergency services, M2M, cyber security, network evolution, quality of service, billing support, operations, and much more. These priorities follow a fast-track development lifecycle — from design and innovation through standards, specifications, requirements, business use cases, software toolkits, open source solutions, and interoperability testing.

ATIS is accredited by the American National Standards Institute (ANSI). The organization is the North American Organizational Partner for the 3rd Generation Partnership Project (3GPP), a founding Partner of the oneM2M global initiative, a member of the International Telecommunication Union (ITU), as well as a member of the Inter-American Telecommunication Commission (CITEL). For more information, visit [www.atis.org](http://www.atis.org).

---

### Notice of Disclaimer & Limitation of Liability

The information provided in this document is directed solely to professionals who have the appropriate degree of experience to understand and interpret its contents in accordance with generally accepted engineering or other professional standards and applicable regulations. No recommendation as to products or vendors is made or should be implied.

NO REPRESENTATION OR WARRANTY IS MADE THAT THE INFORMATION IS TECHNICALLY ACCURATE OR SUFFICIENT OR CONFORMS TO ANY STATUTE, GOVERNMENTAL RULE OR REGULATION, AND FURTHER, NO REPRESENTATION OR WARRANTY IS MADE OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. ATIS SHALL NOT BE LIABLE, BEYOND THE AMOUNT OF ANY SUM RECEIVED IN PAYMENT BY ATIS FOR THIS DOCUMENT, AND IN NO EVENT SHALL ATIS BE LIABLE FOR LOST PROFITS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. ATIS EXPRESSLY ADVISES THAT ANY AND ALL USE OF NOR RELIANCE UPON THE INFORMATION PROVIDED IN THIS DOCUMENT IS AT THE RISK OF THE USER.

NOTE - The user's attention is called to the possibility that compliance with this standard may require use of an invention covered by patent rights. By publication of this standard, no position is taken with respect to whether use of an invention covered by patent rights will be required, and if any such use is required no position is taken regarding the validity of this claim or any patent rights in connection therewith. Please refer to <https://www.atis.org/policy/patent-assurances/> to determine if any statement has been filed by a patent holder indicating a willingness to grant a license either without compensation or on reasonable and non-discriminatory terms and conditions to applicants desiring to obtain a license.

---

*Published by*

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

Copyright © 2022 by Alliance for Telecommunications Industry Solutions  
All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher. For information contact ATIS at 202.628.6380. ATIS is online at < <http://www.atis.org> >.

**ATIS-0700041.v002**

ATIS Standard on

# **Wireless Emergency Alerts (WEA) 3.0 Device-Based Geo-Fencing (DBGF)**

**Alliance for Telecommunications Industry Solutions**

Approved August 26, 2022

## **Abstract**

This standard specifies methods for delivering the Alert Originator provided geometric shapes (circle(s) or polygon(s)) defining the Alert Area to the mobile device along with the WEA 3.0 alert text, as well as the encoding of the WEA 3.0 Warning Area Coordinate (WAC) Information Element (IE) for the geometric shapes.

## Foreword

---

The Alliance for Telecommunications 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:

- M. Younge, WTSC Chair (T-Mobile USA)
- P. Musgrove, WTSC Vice Chair (AT&T)
- T. Brooks, WTSC SN Chair (T-Mobile USA)
- P. Musgrove, WTSC SN Vice Chair (AT&T)
- F. Khatibi, Technical Editor (Qualcomm)

The Systems & Networks (SN) subcommittee was responsible for the development of this document.

## Table of Contents

---

1	Scope & Purpose.....	1
1.1	Scope .....	1
1.2	Purpose .....	1
2	References .....	1
2.1	Normative References .....	1
2.2	Informative References .....	2
3	Definitions, Acronyms, & Abbreviations .....	2
3.1	Definitions .....	2
3.2	Acronyms & Abbreviations .....	3
4	WEA Geo-fencing Requirements.....	3
5	Message and Information Element Coding.....	4
5.1	WEA Handset Action Message (WHAM).....	4
5.1.1	<i>WHAM Tag-Length-Value (TLV)</i> .....	4
5.1.2	<i>WHAM TLV Characteristics</i> .....	4
5.1.3	<i>WHAM Tag Coding</i> .....	4
5.1.4	<i>WHAM Active Alert Identity Tuple List</i> .....	5
5.1.5	<i>WHAM Active Alert Identity Tuple List – Common Coordinates</i> .....	5
5.1.6	<i>Active Alert Identity Tuple</i> .....	6
5.1.7	<i>WHAM CMSP Defined Use</i> .....	6
5.2	Warning Area Coordinates (WAC) Information Element (IE).....	7
5.2.1	<i>WAC Tag-Length-Value (TLV)</i> .....	7
5.2.2	<i>WAC TLV Characteristics</i> .....	7
5.2.3	<i>WAC Tag Coding</i> .....	7
5.2.4	<i>Coordinate Coding</i> .....	8
5.2.5	<i>Radius Coding</i> .....	8
5.2.6	<i>Polygon</i> .....	9
5.2.7	<i>Circle</i> .....	10
5.2.8	<i>Geo-Fencing Wait Time</i> .....	10
5.2.9	<i>CMSP Defined Use</i> .....	11

## Table of Tables

---

Table 1 - WHAM TLV.....	4
Table 2 - WHAM TLV tags.....	5
Table 3 - WHAM Active Alert Identity Tuple List TLV .....	5
Table 4 - WHAM Active Alert Identity Tuple List – Common Coordinates TLV .....	6
Table 5 - WHAM Active Alert Identity Tuple List TLV .....	6
Table 6 - WHAM CMSP Defined Use TLV .....	6
Table 7 - WAC TLV.....	7
Table 8 - WAC TLV tags.....	8
Table 9 - Polygon TLV.....	9
Table 10 - Circle TLV.....	10
Table 11 - Geo-Fencing Wait Time TLV.....	10
Table 12 - Geo-Fencing Wait Time values.....	11
Table 13 - CMSP Defined Use TLV.....	11

ATIS Standard on –

# Wireless Emergency Alerts (WEA) 3.0 Device-Based Geo-Fencing (DBGF)

## 1 Scope & Purpose

### 1.1 Scope

On January 30, 2018, the Federal Communications Commission (FCC) adopted a Second Report and Order (R&O) and Second Order on Reconsideration to enhance the effectiveness of Wireless Emergency Alerts (WEA) [Ref 3]. The Second R&O seeks to improve the accuracy emergency managers can geographically target the delivery of WEA messages to areas within their jurisdiction and can precisely target at-risk populations while minimizing disruption to others.

Specifically, the Second R&O requires Participating Commercial Mobile Service Providers (CMSPs) to meet the new requirements without affecting the 360-character text allotment:

- Deliver alert messages to an area that matches the target area specified by the alert as a circle or polygon to 100 percent of the target area with no more than 0.1 of a mile overshoot or to an area that best approximates the target area on only those elements of its network infrastructure incapable of matching the target area.
- Preserve alert messages in a consumer-accessible format and location for at least 24 hours after the message is received on the mobile device, or until deleted by the user.

NOTE: Some CMSPs may interpret “is received” to mean “is presented.”

The use of the term WEA in this specification refers to WEA 3.0, unless otherwise indicated. This specification is intended for use by participating CMSPs per the FCC definition described in ATIS-0700035, *Wireless Emergency Alert (3.0) Service Description* [Ref 100], and all references to CMSPs in this specification refer to participating CMSPs.

The regulatory background is described in detail in the Service Description in ATIS-0700035 [Ref 100].

### 1.2 Purpose

The purpose of this standard is to specify methods for delivering the Alert Originator provided geometric shapes (circle(s) or polygon(s)) defining the Alert Area to the mobile device along with the WEA 3.0 alert text, as well as the encoding of the WEA 3.0 Warning Area Coordinate (WAC) Information Element (IE) for the geometric shapes.

## 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.

### 2.1 Normative References

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

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