ATIS-0500047

Volunteer-based Location Test Methodology

AMERICAN NATIONAL STANDARD FOR TELECOMMUNICATIONS

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.

AMERICAN NATIONAL STANDARD

Approval of an American National Standard requires review by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made towards their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

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 OFMERCHANTABILITY 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 OR 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 [http://www.atis.org/legal/patentinfo.asn] 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.

ATIS-0500047, *Volunteer-based Location Test Methodology*

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

ATIS-0500047

ATIS Standard on

Volunteer-based Location Test Methodology

Alliance for Telecommunications Industry Solutions

Approved July 10, 2024

Abstract

This document provides guidelines for testing device-based location technologies using volunteer testers, operating the users' own mobile wireless devices from their own homes and places of work. Such testing measures performance benefits that may occur from real world devices acquiring operational awareness in the specific context of each user's life. Broad guidelines are offered for defining, scoping, and configuring testing, and safeguards are described to ensure testing quality and reliability.

Foreword

The Alliance for Telecommunications Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The Emergency Service Interconnection Forum (ESIF) provides a form to facilitate the identification and resolution of technical and/or operational issues related to the interconnection of wireline, wireless, cable, satellites, Internet, and emergency services networks.

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* denote 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, ESIF, 1200 G Street NW, Suite 500, Washington, DC 20005.

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

- B. Abley, ESIF Chair (NENA)
- P. McCollum, ESIF First Vice-Chair (Comtech)
- J. Torres, ESIF Second Vice-Chair (Verizon Wireless)
- K. Springer, ESIF ESM Co-Chair (AT&T)
- J. Green, ESIF ESM Co-Chair (T-Mobile)
- E. Amoah, ESIF NGES Co-Chair (Verizon Wireless)

The ESM Subcommittee was responsible for the development of this document.

Table of Contents

Table of Tables

ATIS Standard on –

Volunteer-based Location Test Methodology

1 Scope, Purpose, & Application

1.1 Scope

This document provides guidelines for testing device-based location technologies using volunteer testers, operating their own mobile wireless devices. A technology-neutral approach to implementing such testing using a practical architecture with a non-intrusive method for handling volunteer testers' emergency test calls is defined. Broad parameter guidelines are also provided to identify the size of the volunteer tester pool and the attributes of target volunteer testers to participate in the testing, which are in a range of buildings and test regions. Safeguards to ensure the quality and reliability of volunteer-initiated test calls are also described.

The methods delineated in this document are sufficiently broad to apply to horizontal and vertical accuracy, i.e., XYZ geodetic location testing. They could also be simplified for Z-axis only testing as well as adapted to testing Civic Address information that may be delivered with a geodetic location.

1.2 Purpose

Modern wireless devices are increasingly designed to learn the characteristics of the environment in which they operate, and in so doing they become aware of their operational context and setting. This increased awareness has the potential to improve location technology performance, but any such improvement is difficult to measure without using each device in its specific user context.

Current location technology testing methodologies use devices specifically allocated for testing, and consequently lack the awareness a real user's mobile device would acquire over time. Attempts have been made to 'condition' these test devices to simulate this awareness, but it is unclear if this conditioning accurately replicates the performance a real user's device achieves. An alternative is needed where testing occurs using the devices of volunteer testers, so that measured performance benefits from the devices' operational awareness in the specific context of each volunteer tester's life.

The purpose of this document is to define a framework for using volunteer testers operating their own mobile wireless devices to test the reliability and accuracy of Device Based Location (DBL). A framework for performing this testing is described, its operational considerations are identified, and guidelines for various volunteer-related issues presented.

1.3 Application

This document is intended to be used as a guide when assembling a volunteer-based DBL testing campaign and supporting system.