



ATIS-0700021

ATIS Standard on -

**CANADIAN WIRELESS PUBLIC ALERTING SERVICE (WPAS) LTE MOBILE
DEVICE BEHAVIOR**



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ATIS-0700021, Canadian Wireless Public Alerting Service (WPAS) LTE Mobile Device Behavior Specification

Is an American National Standard developed by the **Systems and Networks (SN)** Subcommittee under the **ATIS Wireless Technologies and Systems Committee (WTSC)**.

Published by

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

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Canadian Wireless Public Alerting Service (WPAS) LTE Mobile Device Behavior Specification

Alliance for Telecommunications Industry Solutions

Approved: August, 2015

Abstract

This document defines a set of requirements for the behavior of WPAS Capable Mobile Devices whenever a WPAS alert, transmitted over a Long Term Evolution (LTE) network, is received. Implementation of the requirements contained within this specification is mobile device manufacturer dependent.

Foreword

The Alliance for Telecommunication Industry Solutions (ATIS) serves the public through improved understanding between providers, 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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Canadian Wireless Public Alerting Service (WPAS) LTE Mobile Device Behavior Specification

1 Scope, Purpose, & Application

1.1 Scope

This document defines a set of requirements for the behavior of WPAS Capable Mobile Devices whenever a WPAS alert, transmitted over a Long Term Evolution (LTE) network, is received. Implementation of the requirements contained within this specification is mobile device manufacturer dependent.

1.2 Purpose

The purpose of this specification is to define the common set of requirements for WPAS Capable Mobile Device behavior whenever a WPAS alert message is received and presented. This common set of requirements will allow Federal, Provincial, and Territorial level government agencies to develop subscriber WPAS awareness information.

1.3 Application

The Canadian (WPAS) LTE Mobile Device Requirements described herein shall supplement the J-STD-100 [Ref 1] / J-STD-100.a [Ref 2] CMAS Mobile Device Behavior Specification to facilitate the delivery of bilingual emergency alerts to WPAS Capable Mobile Devices.

The differences between the American Wireless Emergency Alerts (WEA) (also known as Commercial Mobile Alert System [CMAS]) and the Canadian Wireless Public Alerting Service (WPAS) 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 [Ref 10] (known as Presidential Alerts in WEA) and;
4. WPAS requires the use of a Canadian specific cadence, alert tone and alert banner to notify wireless users of alerts.

It is intended that this Standard shall be used in conjunction with J-STD-100 [Ref 1] and J-STD-100.a [Ref 2] as a Normative Reference.

2 Normative References

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.

[Ref 1] J-STD-100, *Joint ATIS/TIA CMAS Mobile Device Behavior Specification*; January 30, 2009.¹

¹ This document is available from the Alliance for Telecommunications Industry Solutions (ATIS), 1200 G Street N.W., Suite 500, Washington, DC 20005 < <https://www.atis.org/docstore/product.aspx?id=24590>>.

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- [Ref 2] J-STD-100.a, *Supplement A to J-STD-100, Joint ATIS/TIA CMAS Mobile Device Behavior Specification*; December, 2012.²
- [Ref 3] SOREM Public Alerting Working Group, *FPT REQUIREMENTS for WIRELESS PUBLIC ALERTING v. 1.0*; May 2013.³
- [Ref 4] SOREM Public Alerting Working Group, *NATIONAL PUBLIC ALERTING SYSTEM COMMON LOOK AND FEELGUIDANCE 1.0*, October 2013.⁴
- [Ref 5] WPAS Steering Committee. *WPAS Requirements Definition - Deliverable 1.9*; May 2105.⁵
- [Ref 6] Public Safety Canada, *Request to CISC to develop technical specifications for a wireless public alerting service*, July 2014.⁶
- [Ref 7] *CRTC Decision, Broadcasting Regulatory Policy CRTC 2014-444-Section 101*, August 2014.⁷
- [Ref 8] 3GPP TS 23.041 3RD Generation Partnership Project; *Technical Specifications Group Core Network and Terminals; Technical Realization of Cell Broadcast Service (CBS)*.⁸
- [Ref 9] 3GPP TS 22.268 3RD Generation Partnership Project; *Technical Specification Group Services and System Aspects; Public Warning System (PWS) requirements*.⁹
- [Ref 10] *Senior Officials Responsible for Emergency Management (SOREM) Broadcast Immediate (BI) Alert List*¹⁰
- [Ref 11] *Canadian Official Languages Act*¹¹
- [Ref 12] CRTC Broadcasting and Telecom Regulatory Policy CRTC 2009-430 “*Accessibility of telecommunications and broadcasting services*”, July 2009¹²
- [Ref 13] Peter Menzies speech to the National Public Alerting Summit¹³
- [Ref 14] CRTC *Three Year Plan 2015-2018*, April 2015¹⁴
- [Ref 15] CRTC Interconnection Steering Committee (CISC) – Network Technology Working Group (NTWG), *Canadian Wireless Public Alerting Service (WPAS) LTE Mobile Device Requirements*, 2014/01/06¹⁵

² This document is available from the Alliance for Telecommunications Industry Solutions (ATIS), 1200 G Street N.W., Suite 500, Washington, DC 20005 < <https://www.atis.org/docstore/product.aspx?id=27865> >.

³ This document is available from Canadian Radio-television and Telecommunications Commission < <http://www.crtc.gc.ca/public/cisc/n-docs/NTCO0587.docx> >.

⁴ This document is available from Defence Research & Development Canada (DRDC) < http://cradpdf.drdc-rddc.gc.ca/PDFS/unc140/p538116_A1b.pdf >.

⁵ This document is available from the CRTC < <http://www.crtc.gc.ca/public/cisc/nt/NTTF033a.pdf> >.

⁶ This document is available from the CRTC < <http://www.crtc.gc.ca/public/cisc/nt/NTOD0012.pdf> >.

⁷ This document is available from the CRTC < <http://www.crtc.gc.ca/eng/archive/2014/2014-444.htm> >.

⁸ This document is available from < <http://www.3gpp.org/DynaReport/23041.htm> >.

⁹ This document is available from < <http://www.3gpp.org/DynaReport/22268.htm> >.

¹⁰ This document is available from < <https://alerts.pelmorex.com/download/public/Broadcast%20Immediately%20-NAAD%20System%20Support%20Policy%20-%20V2.0%2020-Nov-2014.pdf> >.

¹¹ This document is available from < <http://laws-lois.justice.gc.ca/eng/acts/O-3.01/page-1.html> >.

¹² This document is available from the CRTC < <http://www.crtc.gc.ca/eng/archive/2009/2009-430.htm> >.

¹³ This transcript is available from the Government of Canada News Website < <http://news.gc.ca/web/article-en.do?nid=939289> >.

¹⁴ This document is available from the CRTC at < <http://www.crtc.gc.ca/eng/backgrnd/plan2015/plan2015.pdf> >.

¹⁵ This document is attached in section 9.1 of the NTWG's Technical WPAS report (NTRE055) found at < <http://www.crtc.gc.ca/cisc/eng/cisf3d0g.htm> >.

3 Definitions, Acronyms, & Abbreviations

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

3.1 Definitions

3.1.1 WPAS Capable Mobile Device. A WPAS Capable Mobile Device supports all the CMAS functionality as specified in J-STD-100 [Ref 1] and its Supplement A [Ref 2] plus supports the additional requirements detailed in this standard. Non-handset devices with LTE modules can optionally support WPAS.

3.2 Acronyms & Abbreviations

ATIS	Alliance for Telecommunications Industry Solutions
BI	Broadcast Immediate (Equivalent to Presidential Alerts)
CBS	Cell Broadcast Service
CMAS	Commercial Mobile Alert System
CISC	CRTC Interconnection Steering Committee
CRTC	Canadian Radio-television and Telecommunications Commission
FPT	Federal/Provincial/Territorial
LTE	Long Term Evolution
MI	Message Identifier
NAAD	National Alert Aggregation & Dissemination System
NPAS	National Public Alerting System
NTWG	Network Technology Working Group
PLMN	Public Land Mobile Network
PWS	Public Warning System
SOREM	Senior Officials Responsible for Emergency Management
TIA	Telecommunications Industry Association
UCS	Unicode Character Set
WEA	Wireless Emergency Alerts
WPAC	Wireless Public Alert Service Architecture for C-Interface
WPAS	Wireless Public Alerting Service
WSP	Wireless Service Provider (equivalent to CMSP in the USA)

4 Canadian Legislative & Regulatory Background

4.1 Introduction

The Canadian telecommunication and broadcast industry are governed by policies set out in the Broadcasting Act, Telecommunications Act and Canada's anti-spam legislation (CASL). The Canadian Radio-television and Telecommunications Commission (CRTC) (<http://www.crtc.gc.ca/eng/acrtc/acrtc.htm>) is the Canadian government regulator who supervises the industries and issues orders and regulations based on the objectives stated in the policies.

In 2009, the CRTC designated a Canadian national public alerting message aggregator (<https://alerts.pelmorex.com/>) for the National Public Alerting System (NPAS) (<http://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/mrgnc-prprdncs/ntnl-pblc-lrtng-sstm-eng.aspx>, <http://www.crtc.gc.ca/eng/archive/2009/2009-340.htm>).

In May 2013, the Federal/Provincial/Territorial (FPT) Public Alerting Working Group of Senior Officials Responsible for Emergency Management produced the "F/P/T REQUIREMENTS for WIRELESS PUBLIC ALERTING v. 1.0" [Ref 2]. This document was developed as a starting point for discussion amongst the wireless industry, Public Safety Canada (PS), Industry Canada, and the CRTC regarding public safety authorities' expectations for wireless public alert distribution. Also, of note is the "NATIONAL PUBLIC ALERTING SYSTEM COMMON LOOK AND FEEL GUIDANCE 1.0" [Ref 3] released by the F/P/T Public Alerting Working Group in April 2013. Although focused on public alert distribution through television and radio broadcast media, this guidance document provides additional information about the expected user experience for Canadians receiving NPAS alerts via multiple distribution channels. The WPAS Operational and Functional Requirements Definition [Ref 5] was then developed based upon these two preceding documents. This document reflects the required functional and operational requirements for WPAS.

In July of 2014, Public Safety Canada issued a Letter of Request to the Chair of the CRTC Interconnection Steering Committee (CISC) to begin developing specifications for WPAS [Ref 4]. This was further assigned to CISC's Network Technology Working Group (NTWG) where a Task Information Form (TIF) 033 was opened. The NTWG includes representation from the Canadian Radio-television and Telecommunications Commission (CRTC) as well as Canada's Wireless Service Providers (WSP). The NTWG then endeavored to develop Canadian WPAS Technical Implementation Specifications for both Mobile Devices and Network Integration. This document represents the Mobile Device specifications for WPAS.

In August 2014, the CRTC issued a Broadcasting Regulatory Policy CRTC 2014-444 and Broadcasting Orders CRTC 2014-445, 2014-446, 2014-447, and 2014-44 [Ref 7]. While these new regulations mandate that Radio and Television outlets must deliver Public Alerts to their listeners and viewers, Section 101 of this Regulatory Policy further states that "Although the Commission is addressing the participation of the broadcasting industry in emergency alerting in the present policy, it strongly encourages, as it did in Broadcasting Decision 2011-438, the use of digital media and mobile platforms to alert Canadians to imminent or unfolding dangers, particularly given the increase since 2011 in the use of mobile devices by Canadians. The Commission notes that Public Safety Canada has requested that the CRTC Interconnection Steering Committee (CISC) initiate a new task to assist in the development of the technical specifications and network design of a wireless public alerting service for Canada. Subsequently, the Defense Research and Development Canada Centre for Security Science, through the Canadian Safety and Security Program, will implement a pilot project based on the technical specifications and a network design developed by CISC, to build, test and operate an effective wireless public alerting service. The Commission awaits the results of these initiatives." It is anticipated that WPAS will also be included in the regulatory landscape of Canada's NPAS in the future.

In a speech delivered at the National Public Alerting Summit held in Edmonton on Feb 18, 2015, Peter Menzies, Vice-Chairman of Telecommunications at the CRTC, reaffirmed the CRTC's position [Ref 13]. He reminded the audience that "The Telecommunications Act states as a primary objective in Section 7 (a) that: ...the Canadian telecommunications policy has as its objectives: (a) to facilitate the orderly development throughout Canada of a telecommunications system that serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions; ...You will note that I emphasized the word "safeguard." And you will note that it is not our role to do any safeguarding per se but it is very much our role – indeed an obligation placed upon us by Parliament – to ensure the "orderly development" of a system that safeguards Canadians." Mr. Menzies then went on to say "We have a keen interest in developing a set of national standards, especially as it relates to the Network Working Group on wireless public alerting. This forum, which operates under the umbrella of the CRTC Interconnection Steering Committee, is working on developing standards that would enable emergency

management officials to relay information to Canadians on their cellphones. The standards that the working group is validating emerged from SOREM and a live demonstration will hopefully take place later this year. We will be following this trial with great interest, in the hopes that it paves the way for its adoption by all jurisdictions. We will act, within the confines of our mandate, to ensure that the appropriate policies are in place in as timely a manner as possible.”

4.2 Key Government of Canada Provisions

Canada is subject to the Official Languages Act which is a Canadian law that came into force on September 9, 1969 and was substantially amended in 1988. The official languages of Canada are English and French, which "have equality of status and equal rights and privileges as to their use in all institutions of the Parliament and Government of Canada," according to Canada's constitution. Official bilingualism is the term used in Canada to collectively describe the policies, constitutional provisions, and laws that ensure legal equality of English and French in the Parliament and courts of Canada, protect the linguistic rights of English and French-speaking minorities in different provinces, and ensure a level of government services in both languages across Canada .

In addition to the symbolic designation of English and French as official languages, official bilingualism is generally understood to include any law or other measure that:

- Mandates that the federal government conduct its business in both official languages and provide government services in both languages;
- Encourages or mandates lower tiers of government (most notably the provinces and territories, but also some municipalities) to conduct themselves in both official languages and to provide services in both English and French rather than in just one or the other;
- Places obligations on private actors in Canadian society to provide access to goods or services in both official languages (such as the requirement that food products be labeled in both English and French);
- Provides support to non-government actors to encourage or promote the use or the status of one or the other of the two official languages. This includes grants and contributions to groups representing the English-speaking minority in Quebec and the French-speaking minorities in the other provinces to assist with the establishment of an infrastructure of cultural supports and services.

At the provincial level, New Brunswick and Manitoba officially recognize the equal status of French and English. While French has equal legal status in Manitoba restored due to a court ruling that struck down seventy-year-old English-only laws in 1985, in practice, French language services are only provided in some regions of the province [Ref 3]. Quebec has declared itself officially unilingual (French only). Alberta and Saskatchewan are also considered unilingual (English only) [Ref 4]. In practice, all provinces, including Quebec, offer some services in both English and French and some publicly funded education in both official languages up to the high school level (English language postsecondary education institutions are also present in Quebec, as are French language postsecondary institutions in other provinces, in particular in Ontario and New Brunswick). English and French are official languages in all three territories.

As such, the WPAS platform including the C-Interface and Mobile Devices shall be architected to deliver bilingual alerts. Furthermore, it shall be architected to leave the choice of language and the sequence of language to be the responsibility of the government alerting authorities. These could include English unilingual, French unilingual, English plus French bilingual or French plus English bilingual alerts depending upon the region being geo-targeted for an emergency alert.

4.3 Canadian WPAS Reference Design

The following figure is the Canadian WPAS Reference Design as specified in [Ref 15].

WPAS System Architectural Block Diagram

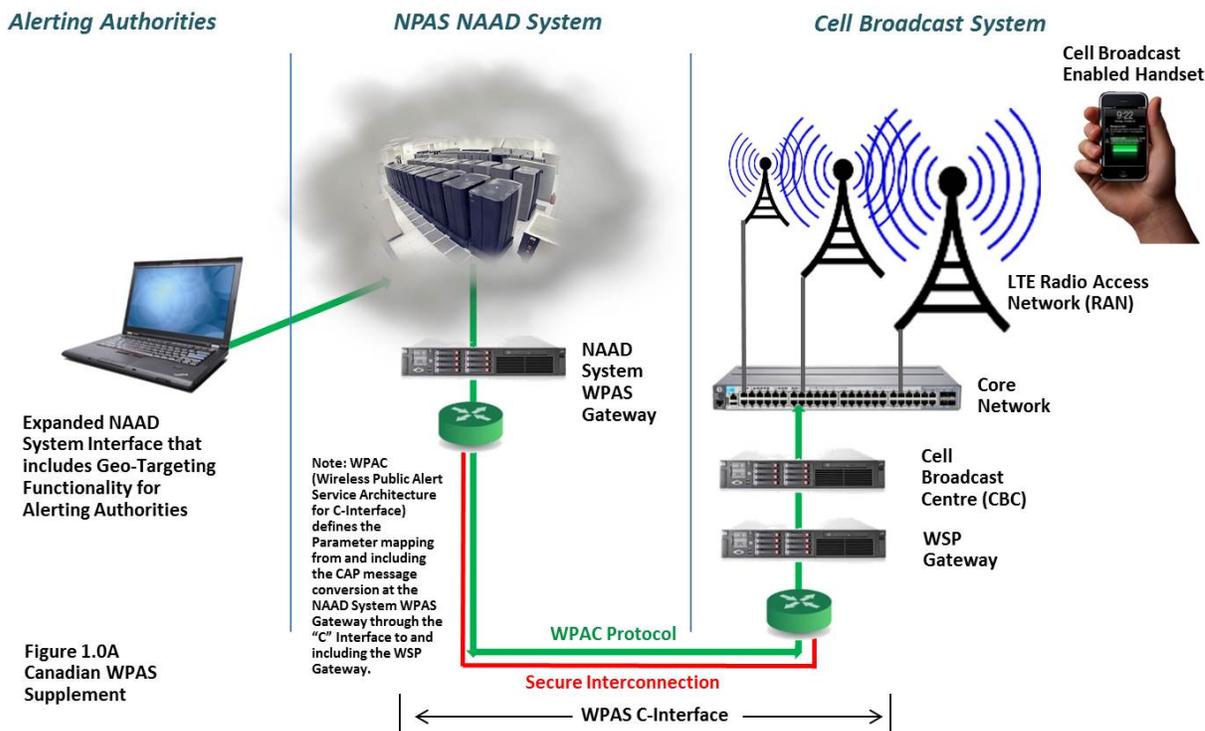


Figure 1.0A
Canadian WPAS
Supplement

Figure 4.1 – Supplement: Canadian WPAS Reference Architecture

5 Assumptions

The following assumptions apply to the support of WPAS services on mobile devices:

1. The Canadian WPAS is intended to be largely based on and compatible with the United States WEA. Both services are based on 3GPP PWS standards. The key purpose of this document is to describe the differences in mobile device behaviors between WPAS and WEA. In those areas where this document is silent, the reader should assume that the WPAS mobile device behavior is as described in J-STD-100 "Joint ATIS/TIA CMAS Mobile Device Behavior Specification" [Ref 1] and its Supplement A [Ref 2].
2. WSPs are not required to support WPAS on legacy or non-WPAS compliant devices. Thus, the behavior of such mobile devices with respect to WPAS alerts is outside the scope of this specification.
3. WSPs are not required to support WPAS on non-LTE devices. Thus, the behavior of such mobile devices with respect to WPAS alerts is outside the scope of this specification.
4. This specification only covers WPAS functionality of the mobile device. All other mobile device functions such as registration, authentication, etc., are outside the scope of this specification.
5. Since the over-the-air WPAS delivery mechanism is subject to expected system delays due to factors such as processing and propagation, the delivery of any WPAS message at a certain time and place is not guaranteed.

6 Mandated Mobile Device Requirements

6.1 Alert Vibration Cadence & Tones for WPAS

The mobile device shall only use the described Cadence and Alert tones for WPAS alerts, when the mobile device receives a CB message with a Message Identifier value in the range 4370 – 4399 (TS 23.041 [Ref 8]).

Mobile Devices shall use the following WPAS Cadence and Alert tones:

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The Canadian Alerting Attention Signal is comprised of two alternating complex tones. Tone 1 is formed by the combination of three frequencies: 932.33 Hz, 1046.5 Hz, and 3135.96 Hz, modulated at 7271.96 Hz. Tone 2 is formed by the combination of the three frequencies: 440Hz, 659.26 Hz, and 3135.96 Hz, modulated at 1099.26 Hz.

The duration of the audio attention signal is 8 seconds and alternates between Tone 1 and Tone 2 every 0.5 seconds. The following figure is an informative illustration for the temporal pattern of the Canadian Alerting Attention Signal:

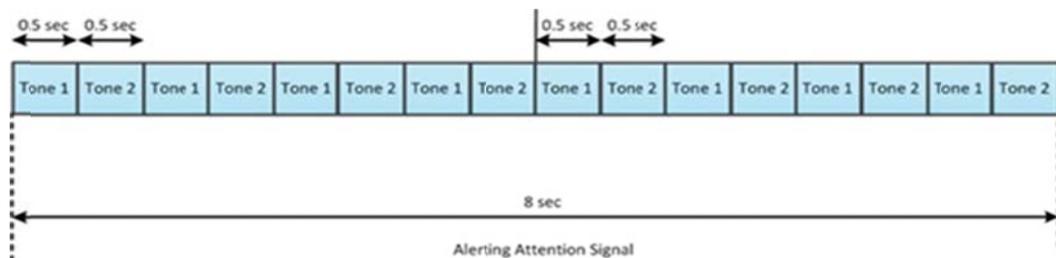


Figure 6.1 – Temporal Pattern of the Canadian Alerting Attention Signal

If the WPAS alert message is updated, the Canadian Alerting Attention Signal shall also be used to introduce the updated WPAS alert message.

The Canadian Alert Vibration Cadence employs a temporal pattern that matches Canadian Alerting Attention Signal. This is a “fast” 0.5 second vibration during Tone 1 and a 0.5 second “slow” vibration during Tone 2 for the entire duration of the Alerting Attention Signal. If not possible on certain mobile devices, a vibration cadence of 0.5 second ON and 0.5 second OFF shall apply.

The duration of the Canadian Alert Vibration Cadence is 8 seconds.

6.2 WPAS Alert Banner

The mobile device shall display a WPAS Alert banner with the following text:

EMERGENCY ALERT / ALERTE D'URGENCE

When the mobile device is in Canada, this banner is generated by the mobile device and is the same for all WPAS alerts.

The mobile device shall only use the described WPAS Alert banner when the mobile device receives a CB message with a Message Identifier value in the range 4370 - 4399 (TS 23.041 [Ref 8]).

6.3 Bilingual Alert Messages

It has been mandated by Canadian government agencies, that in the Canadian implementation of CMAS, known as WPAS (Wireless Public Alerting Service), all emergency alerts issued in Canada will have the capability to be sent in the two official languages of Canada (English and French).

Since the currently used GSM 7-bit character set does not support all accented characters in the French Language and UCS-2 does, it is a requirement that handsets used in Canada support the UCS-2 character set.

Emergency alerts in Canada will be issued by Canadian federal authorities or by Provincial or Municipal authorities. Regional alert issuers may elect to issue a unilingual alert (in French or English) to reflect the demographics of their respective regions. In any event, UCS-2 support is required to correctly display all French language accents.

The WPAS mobile device shall support GSM 7 and UCS-2 message encoding.

7 Considerations for Individuals with Special Needs

The Canadian Radio-television and Telecommunications Commission addresses the requirements for individuals with special needs in Broadcasting and Telecom Regulatory Policy CRTC 2009-430 [Ref 12].

Clause 44 of that policy states, “Accordingly, the Commission requests that, by 21 October 2009, all WSPs [Wireless Service Providers] offer and maintain in their inventories at least one type of wireless mobile handset that will provide access to wireless service by persons who are blind and/or have moderate-to-severe mobility or cognitive disabilities.”

Device manufacturers are encouraged to provide mobile devices with capabilities that will allow such persons to receive and understand WPAS messages. Such devices might employ text-to-speech conversion or screen reading capability, as described in J-STD-100 Section 11 [Ref 1].

Annex A: Use Cases

(informative)

This informative annex provides example use cases on the behavior of the mobile devices for WPAS alerts. These use cases are written from the end user point of view and provide insight into the WPAS user experience which is used in the development of the mobile device requirements of this specification. The example use cases included in this section are as follows:

- Unilingual message use case.
- Bilingual message use case.

A.1 Use Case #1 – Unilingual Message Use Case

Michel purchased a mobile phone that supports WPAS alerts. Michel is a French speaking person who lives in Quebec and occasionally travels across Canada.

One day Michel was on a trip in Calgary, Alberta. On that day there was a major storm north of Calgary which caused a flood. The Emergency Alerting Authority decided to broadcast a WPAS alert message throughout the Calgary region. The content of the alert message was in English only. Michel received the WPAS alert but was unable to comprehend the message. The alert tone and bilingual alert banner were presented correctly so Michel was able to determine that there was an emergency and he was able to ask for assistance.

Note that generally, alert messages will be bilingual, including both English and French versions of the message.

A.2 Use Case #2 – Bilingual Message Use Case

Michel purchased a mobile phone that supports WPAS alerts. Michel is a French speaking person who lives in Quebec and occasionally travels across Canada.

One day Michel was on a trip in Calgary, Alberta. On that day there was a major storm north of Calgary which caused a flood. The Emergency Alerting Authority decided to broadcast a WPAS alert message throughout the Calgary region. The content of the alert message was in English only. Michel received the WPAS alert but was unable to comprehend the message. The alert tone and bilingual alert banner were presented correctly so Michel was able to determine that there was an emergency and he was able to ask for assistance.

A short time later, the Alerting Authority produced an updated bilingual version of the alert message. Michel received the WPAS alert and was able to comprehend the message.