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DHS Section 508 Compliance Test Process for iOS

Mobile Applications

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ABOUT THIS DOCUMENT

DHS TEST PROCESS FOR IOS MOBILE APPLICATIONS

The Department of Homeland Security (DHS) Office of Accessible Systems and Technology (OAST) has a mission to provide strategic direction, technical support, and training to ensure agency employees and customers with disabilities have equal access to information and data.

Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d), requires all federal departments and agencies to ensure that their electronic and information technology (EIT) is accessible to people with disabilities. This DHS Section 508 Compliance Test Process for iOS Mobile Applications has been produced in support of this mission.

HOW THIS DOCUMENT IS STRUCTURED

Section 1 describes the rationale for testing mobile software apps (including those with embedded web views) using the process defined in this document. The rationale behind each individual test in this document is also provided.

Section 2 provides details of the test environment for this process (device, additional equipment, test tools), including device recommendations, installation and settings guidance.

Section 3 is the iOS test process. Each test includes step-by-step instructions on how and what to test, as well as instructions on which standards to mark as compliant or not compliant. Please be sure you are following the test process for the correct App Operating System (OS).

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SECTION 1:

INTRODUCTION AND RATIONALE FOR TESTS

APPLYING THE SECTION 508 STANDARDS TO THE IOS MOBILE APPLICATIONS TEST PROCESS

The Section 508 technical standards include one section aimed at browser-based information (Web), and another section aimed at native applications and operating systems (Software). The standards do not specifically call out mobile apps or mobile web content. DHS has determined that mobile applications require a testing process distinct from the

desktop/laptop application test process due in part to the lack of tools to evaluate accessibility on mobile platforms. Mobile platforms also have greater limitations on accessibility applications programming interfaces (APIs) and assistive technologies that are available for a given platform.

The Section 508 Standards also contain a section on Functional Performance Criteria (FPC). The FPC require that "at least one mode of operation and information retrieval that does not require user [vision, hearing, speech or fine motor skills]

shall be provided, or support for assistive technology used" by people who are blind, low vision, deaf, hard of hearing, speech disabled, or have limited physical capabilities.

There are two broad categories of mobile content: native mobile apps that are designed to run on a mobile device and mobile web content that is designed to be viewed in a mobile browser. For testing purposes, mobile apps including those with embedded web views – sometimes referred to as “hybrid” apps – should use this mobile testing process. Hybrid apps are covered under this test process primarily because it may not be possible to gain access to the web content in these web views via methods used for testing non-mobile web and software content.

Web content designed for mobile consumption should continue to use the Software and Web application test process used for desktop/laptop content, with a modified viewport size.

The DHS mobile testing process begins with evaluating elements that are most commonly found in mobile applications and therefore most likely to have applicable accessibility requirements. There are 8 main steps in the test process.

THE RATIONALE FOR EACH TEST

Each step of the test process includes only the information that will need to be referenced frequently, namely the directions on how to test, and how to interpret the test results. To simplify the organization of this document, the rationale for each individual test has been separated out, and is presented below.

1. KEYBOARD AND FOCUS TEST

KEYBOARD

Interactive elements of interfaces include any elements that a user is expected to use, modify, or edit. Examples include navigation controls (links, buttons etc.), and editable content (selectable text, data input etc.).

It must also be possible for users to determine what the interactive elements are, and how to use them. This requires that the visual label / instructions are programmatically associated with controls; otherwise non-visual users will not be able to tell which label relates to which control / form-element.

The keyboard-only test determines whether it is possible to control the interface without the visual and/or physical capabilities necessary to use touch gestures without assistive technology or a pointing device.

Wherever users are expected to interact with components, it must be possible for users to access those components or perform those functions using only the keyboard because (i) using a pointing device or touch gestures without assistive technology is not possible when the user has no sight, and (ii) using a pointing device or touch gesture is not possible when 5

the user does not have the physical capability / dexterity to effectively control a pointing device or use touch gestures without assistive technology.

Keyboard access is defined as use with a physical keyboard that is attached to the mobile device, either separately through a protocol such as Bluetooth, or integrated. On iOS, keyboard access must be tested with the use of VoiceOver as keyboard access to all interactive content is not available otherwise. iOS provides a number of alternative input methods including accessible touch gesture access through built-in assistive technology such as VoiceOver and AssistiveTouch.

FOCUS

Ideally, interfaces use standard keyboard commands (TAB, Space Bar, Enter, Escape, etc.), making their use easy and intuitive. On occasion, an interface may be designed to expand on the basic set of standard keyboard commands, and/or remap standard keys. In both of these cases, users must learn the non-standard keys. In order to be aware of non-standard key commands, users must be notified of their existence and correct use through the interface, application help, and/or documentation.

When controlling the interface with the keyboard only, if there is no visual differentiation between the current focused item and the rest of the interface / content, then it is not possible to tell where in the interface you are. Therefore, a visual indication of focus is necessary.

A logical order and groupings of interface components is normally a given in the design of software applications and embedded web content. Groupings and order are usually visually apparent. Logical arrangements are used to aid visual appeal and improve usability. However, when the focus/TAB order does not follow the logical order, users can become confused, make errors, and may not understand the contextual meaning of components. This is especially true for people who have no vision, or who have low vision, and are relying on AT.

Some components in embedded web content and software screens are intentionally hidden to reduce visual clutter. Other components only appear as part of a procedure such as an error notification. Content with such interface components may be revealed in an inaccessible manner by requiring user vision and/or requiring the use of a mouse. Keyboard and touch screen users need to be able to access the information and controls that are revealed, and users without vision, or with low vision, need to know that new content has appeared.

2. SCREEN READER TEST

Assistive technology utilizes accessibility properties of elements and provides them to users through various modes to provide access to the application. Accessibility properties are provided through the accessibility APIs available in mobile operating systems, HTML code, and ARIA properties or other protocols. Without these labels and accessibility properties, the assistive technology may not provide correct information to the user.

In order to correctly and accurately complete a form, it is necessary to follow instructions, directions and cues, as well as enter information in the correct places. A given form component may be the subject of instructions that are not positioned next to the component (e.g., at the top of a form, the instruction is "If you are the home owner, complete parts a, b, and f"). In such cases, form designers will use visual layout and flow to direct the user. However, users without vision, or with low vision, may not have access to the visual cues, and hence will be unable to easily find the related instructions for the current form component. For this reason, it is necessary to programmatically associate all relevant instructions, directions and cues with their respective components/controls.

All interface elements including images, charts, and tables that provide meaningful information must be conveyed correctly to assistive technology through their accessibility properties (name, role, state, and value) in a consistent manner for users without vision or with low vision. For the purpose of testing, the name, role, and state expected outcomes are listed in the Elements Table. The tester is testing to see if sufficient characteristics of all elements are announced.

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To aid navigation with screen reading AT software, users can bring up a list of navigation controls on their screens. Users can read through content and decide which of the links in the content they wish to follow (i.e., they do not have to navigate back to the link itself).

Links must have a unique and descriptive name. Say each item for sale has a 'click here' link next to it, and the user calls up the list of controls. The list will have multiple 'click here' links that are not distinguishable. Another common problem occurs when the links only contain URLs, and the purpose of each link may not be apparent. It is therefore required to use meaningful and unique names for links and user controls, to aid navigation using assistive technology for users without vision or with low vision.

For screen reader users, screen orientation is important in order to ensure proper gestures are used. Some apps will allow rotation as the device moves; others are static. Orientation must be announced by the mobile screen reader if the app supports device rotation.

3. VIDEO, AUDIO, AND MULTIMEDIA

This section addresses audio files, animations, video files, and multimedia. Screen reader software cannot interpret images, animation, video, or multimedia. Screen readers will, however, read text that has been associated with interface elements.

The interpretation (meaning) of an interface element must therefore be conveyed textually in the interface programming for assistive technology for users without vision or with low vision.

Animation includes sequences of overlaid images, dynamic changes of state such as a moving speed dial, a chart illustrating dynamic flow changes from one state to another, etc. Video-only files include animations, screen, video captures etc. The visual information provided through animation and video-only must be provided through alternative means for assistive technology for users without vision or with low vision.

Audio-only files include speeches, sound-bites, ambient (background) sounds, etc. Equivalent text descriptions must be provided for users with no hearing or who are hard of hearing.

Synchronized media is a presentation consisting of time-synchronized video and audio. Synchronized media includes public information films, Webcasts, press conferences, and online training presentations.

Some users will not be able to hear the content. Therefore there needs to be another mode to provide the audio

information, such as captions (text showing what is being said, and other relevant sounds). Captions need to be available, but do not necessarily need to be turned on by default. For example, users who need captions can switch them on with a control (usually a 'CC' button for Closed Captions). If there is no means of switching modes, then the default mode must be accessible (i.e., Open Captions).

Because captions must be time-synchronized, separate transcripts will not meet this requirement on their own.

Some users will not be able to see the content. Therefore there needs to be another mode to provide descriptions of the visual information. In synchronized media, this usually means additional narration inserted during breaks in the dialog, describing visual events and cues.

Audio descriptions need to be available, but are not required to be turned on by default. For example, users who need descriptions can switch them on with a control. If there is no means of switching modes, then the audio descriptions must be enabled by default.

The alternative presentation of information must allow understanding of the relevant information. For example,

descriptions might include the looks on people's faces, people handing items to each other, or who has entered the room.

4. COLOR AND CONTRAST

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The use of color to convey meaningful information must be provided through alternative means for users who cannot distinguish colors. Insufficient contrast may make it difficult for some users to see and use the content.

Color dependence is using color as the sole method to convey information. For example, a single unlabeled indicator that is green for 'on', orange for 'standby', and red for 'off' is color dependent.

When color is the only means to convey information, people who are color blind, and people who cannot see, do not have access to the same information that others have. The status or function that is being conveyed by color also needs to be available in a textual format that can be viewed by all, and can be read by screen reader software.

This requirement does not mean that color cannot be used; it means that color cannot be the only means of conveying the information.

The visual difference between the background behind text, and the text itself, may be perceivable by a given designer.

However, beyond color choice which is under control of the designer, many factors beyond the designer's control affect peoples' ability to discern between colors/shades, including age (contrast sensitivity reduces with age), screen brightness, ambient light, color blindness and some types of low vision. The use of color/shade choices that do not contrast well with each other may be deliberate (i.e., artistic preference), or may be the result of programmatic features (e.g., a button's text is black on white, but the text turns yellow in a certain mode, and the background remains white).

In general, the higher the level of contrast used, the more people will be able to see and use the content.

If the color contrast cannot be tested, this will be noted as a failure.

5. FLASHING

The term 'flashing' encompasses interface elements that blink, flicker repetitively, or elements that scroll (e.g., marquee text).

An element that flickers or blinks in the visual field can cause adverse reactions/seizures in people who have photosensitive epilepsy. Section 508 does not permit flashing in the frequency range between 2Hz to 55Hz (from twice per second to 55

times per second). This frequency has been updated in WCAG 2.0, which is followed by DHS, to not permit flickering above 3 hertz (flickering above 55hz is not visually apparent).

Scrolling ('marquee') text should be avoided where possible, because the scrolling effect causes a form of flickering that can be in the prohibited frequency range. Even though this may be imperceptible for many viewers, it can have the same flickering effect for some. Scrolling text should also be tested for Screen reader access.

Due to the current lack of source code and testing tool limitations, all flashing will fail.

6. TIMEOUTS

Messages and/or instructions to the user requesting their response within a given time are typically associated with sites that require a secure login. This includes both server time outs and client side security time outs.

People who use AT such as screen reader software or voice input software may require more time than other users to assimilate the information and execute the controls on a Web page or software application. Because AT users may need more time, applications that have a time out must provide (a) prior notification/warning that a time out is about to occur, and (b) a means for the user to request more time.

7. BUILT-IN ACCESSIBILITY FEATURES

It is possible to write software that controls various aspects of the OS. This may inadvertently cause an OS accessibility feature to deactivate. For example, VoiceOver is a screen reader built in to iOS to allow those who are blind or low vision to 8

access the operating system and applications through the use of speech output and braille. VoiceOver contains its own set of gestures that are used to interact with elements on the screen. Developers should ensure that they do not disable or override the gestures that are used by VoiceOver users, as this will impact their ability to interact with the mobile application.

Similarly, applications must allow assistive technology to be run concurrently with the app. For example, if a low vision user enables the iOS zoom assistive technology feature to get a closer look at a control within an app, the app should not terminate when zoom is activated.

The accessibility features of iOS (the platform for which the tests are written) contain the following user-configurable accessibility features that should not be disabled or disrupted by the software application:

 iOS: VoiceOver, Zoom, Assistive Touch, Invert Colors, Speak Screen, Closed Captioning, Larger Text, microphone text input

8. ACCESSIBLE ALTERNATIVE

An 'Alternate’ is an accessible version containing the same information as the primary application. Alternates will usually contain text in place of the inaccessible content from the primary application. For example, a complex organizational chart may be written in prose. The text must be equivalent, and it must be kept up-to-date.

An 'Alternate' should only be provided for accessibility when the primary application cannot be made accessible. The accessible version must contain the same information as the primary application.

The information should be 'equivalent', but by definition this is not going to be 'exactly the same'. The main points, themes, concepts etc. that the authors are trying to get across in the primary content should also come across in the alternate. For example, if a complex chart on the primary page shows a year with a small increases in earnings in Q2 and a large decrease in Q2, and the text discusses why these trends seem to be occurring, the Alternate should convey the trends, and the high and low data points of interest. An Alternate that just provides all the data points in linear form, with no highlighting of the trends under consideration, would not be considered equivalent.

Alternative versions for accessibility are only permitted when the primary application cannot be made compliant. Common examples where alternative versions are usually permitted include maps and directions, and very complex diagrams and charts.

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SECTION 2:

TEST ENVIRONMENT

DEVICES:

Mobile application testing must be performed on mobile devices such as phones or tablets. The DHS Mobile iOS Test Process's test environment typically utilizes the current Apple Operating System, which as of writing this is iOS 10. Note:

When new OS updates are released, there could be bugs that impact AT use; an older OS may be recommended for testing purposes until an update fixing AT issues is released.

The latest versions of this platform may not be available for all iOS devices. On iOS, the assistive technology is updated with the platform.

A general note on mobile web browsers: The Safari based web view is used for embedded web views on iOS.

ADDITIONAL EQUIPMENT:

 Desktop/laptop to record the test results and for use with the Colour Contrast Analyzer

 A Bluetooth keyboard

o Note: the keyboard commands listed in this document for iOS testing are for Apple keyboards. Testing

with a non-Apple keyboard might result in use of different keyboard commands. The tester will need to

be familiar with proper keyboard commands for their equipment prior to testing.

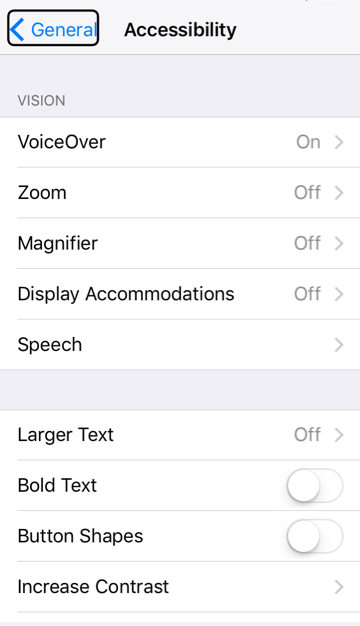
 Sound, Wi-Fi, and Bluetooth capabilities must be available on the mobile device

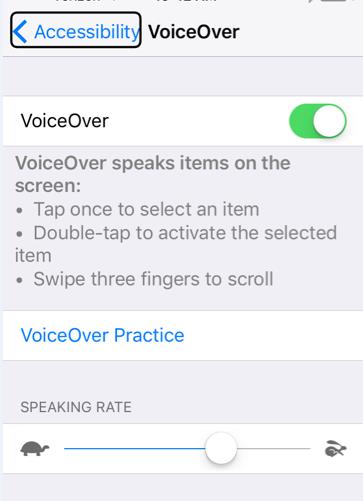
 Mobile device must have the OS version listed above in “Devices” and tools described in the following section installed

TEST TOOLS:

The tools used in the DHS Mobile iOS Test Process have been chosen based on the availability of accessibility inspection tools on mobile platforms. This test process uses platform specific assistive technology to inspect accessibility properties in an evidenced based manner. Use of these tools does not require the tester to view source code or have knowledge of programming languages.

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VOICEOVER

Official Name

VoiceOver

Also Known As

n/a

URL of Product

<http://www.apple.com/accessibility/ios/voiceover/>

Purpose for Section 508

Reveal the label, value, traits, frame, and hint of a user interface control.

Testing

Developed By

Apple

Current Version

iOS 10-Version tied to OS

Installation Advice

VoiceOver is pre-installed on all devices that support iOS 7+.

Settings

To enable VoiceOver, choose Settings > General > Accessibility > VoiceOver: On

From the same screen:

 Speaking Rate: set to a comfortable setting

 Verbosity > Speak Hints: On

 Navigate Images: Always

 Note: if using a non-Apple keyboard, you may also select Modifier Key and

change the keys that must be pressed on a keyboard to activate the VoiceOver

key

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On Rotor screen select the following:

 Items for use with the rotor: Characters, Words, Lines, Punctuation, Hints,

Containers, Headings, Links, Form Controls, Tables, Lists, Visited Links, Non-

Visited Links, Buttons, Text Fields, Search Fields, Images, Static Text, In-Page

Links

On the Settings > General > Accessibility screen

 Speech > Speak Screen: On, then turn Highlight Content On.

o Under that, select Words and Sentences

o Sentence Highlight Style: select Underline

 Larger Text: drag the slider to the far right to the largest “A”

 Subtitles and Captioning > Closed Captions + SDH: On

o Change your Style to something you will easily recognize during testing

 Audio Descriptions > Prefer Audio Descriptions: On

 Accessibility Shortcut - Enabling this setting to " VoiceOver" allows you to turn

VoiceOver on and off by pressing the home button three times quickly

On the Settings > General > Keyboard

 Enable Dictation: On

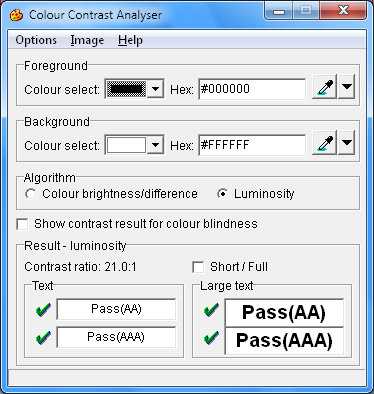
On the Settings > Bluetooth

 Configure an external Bluetooth keyboard to be used with VoiceOver for testing

VoiceOver is a screen reader. While this tool is assistive technology used by people who are blind or visually impaired for access, it can also provide a consistent method of identifying programmatic accessibility information and can be a very useful tool. In order to provide access to touchscreen devices, mobile screen readers provide an alternative set of gestures.

For example, touching an item no longer activates the item when the screen reader is running. Instead it focuses the item under the finger and announces it to the user. The user must double tap to activate the item – thus, a double tap sends a normal single tap gesture. There are a number of gestures that you will need to learn to use the assistive technology. These gestures and keystrokes for using the screen reader with an external keyboard are provided at the end of this document; please review these [commands an](#p52)d become familiar with how VoiceOver works before performing testing.

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COLOR CONTRAST ANALYSER

Official name

Colour Contrast Analyzer

Also Known As

Contrast Analyzer

URL / product

[http://www.paciellogroup.com/resources/contrastAnalyser;](http://www.paciellogroup.com/resources/contrastAnalyser) [http://www.wat-c.org (](http://www.wat-c.org/)Included with page.

the Web Accessibility Toolbar (WAT))

Purpose for 508

Allows the user to use an eye dropper to check the contrast of background and foreground text of an

testing

image taken from a mobile device. This application runs on the Windows platform.

Developed by /

The Paciello Group, WAT-C.org

Owned by

Current version

2.4, English

at the time of

writing

Installation

Download application. Run executable from PC. From the Web Accessibility Toolbar (WAT) choose

advice

Colour > Colour Contrast Analyser.

If using the standalone version (not within WAT), Admin rights are not required to execute this tool of

version 2.2 (version 2.4 may require admin rights).

Enabling the

Run the executable. From the main screen’s Algorithm group, select the Luminosity radio button.

Colour Contrast

Use the eye dropper tool for the foreground to obtain the foreground color and then eye dropper

Analyzer

tool from the background to obtain the background color. Verify the results in the Result –

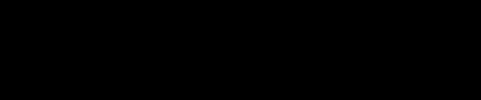
Luminosity section.

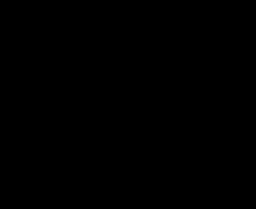
Screenshot of

the Accessibility

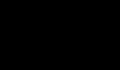
Inspector

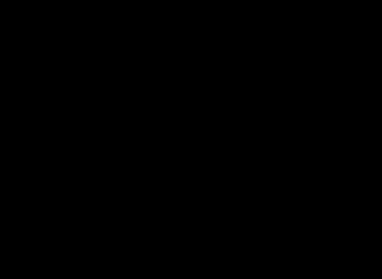
13

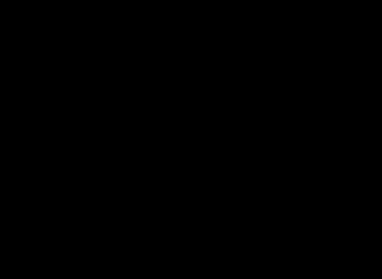












SELECT THE CORRECT TEST PROCESS FOR TESTING

It is important to identify whether the application you are testing is software or Web so that you know which test process to use and what test outcomes are expected.

 Mobile software apps are those delivered to the user via native operating system-based processes (e.g. the app is accessed by downloading through an App Store) – this includes web content embedded in a native app. These

apps should be tested with the Mobile Test process.

 Mobile web interface apps are delivered to the user via the mobile Web browser. If the app opens in a web

browser then use the non-mobile DHS Section 508 Compliance Test Process for Applications.

Note: If an application has an Android OS version and iOS version of the app, the app must be tested on both platforms.

Please use the Android Mobile Application test process for all Android apps.

Through the testing process, a test result can change from Compliant to Not Compliant, but do not change a result from

Not Compliant to Compliant or your results will become inaccurate.

Open App

Did the app

YES

NO

open in a

browser?

Use the DHS

Use this test

Section 508

process for native

Compliance Test

mobile apps

Process for

Applications

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SECTION 3:

DHS SECTION 508 COMPLIANCE TESTS FOR IOS MOBILE APPLICATIONS

STRUCTURE OF THIS SECTION

Each step of the iOS test process includes only the information that will need to be referenced frequently, namely:

 the directions on how to test, and

 how to interpret the test results, and

 the applicable standard(s) and the related technical 508 standards

To simplify the organization of this document:

 the rationale for each individual test has been separated out (see page [5)](#p5).

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1. KEYBOARD AND FOCUS

1.1 KEYBOARD ACCESS

Keyboard access must be available for all interactive interface components (links, buttons, etc.), editable content (text input fields, select options, etc.), and panes that can be accessed or controlled with touch gestures. Where non-standard keyboard commands are employed, users must be notified of alternate keyboard commands through the interface,

application help, and/or documentation.

For a user to know where the keyboard focus is on the screen there must be a visible indication of the currently focused component. If hidden content is revealed on the screen, the keyboard focus must move to the new content. When the sequence of interface components has meaning or requires an order of operation, the focus/TAB order must logically flow with the application/content.

Keyboard access is defined as use with a physical keyboard that is attached to the mobile device, either separately (wireless keyboard) or integrated (built-in keyboard). On-screen keyboards cannot be used for this test. For the purposes of iOS

testing keyboard tests must be performed with VoiceOver running to achieve true keyboard access. With VoiceOver on, users can access all interactive controls; without VoiceOver, users can only access text input fields.

1: KEYBOARD TASKS- HOW TO TEST

1. Find all visible and hidden interactive interface components that are accessible by touch.

Interactive elements may be distinguished from non-interactive elements by using the app without a screen reader and touching each interface control to determine its level of interactivity. Only elements that can be accessed or controlled with a mouse or touch gesture must be keyboard accessible (this also includes any actions that are triggers by a single finger Tap and Hold gesture). Hidden and disabled form fields do not require keyboard access. Control options

triggered by physical manipulation of the device (such as a shake, tilt, or swipe to show menu) must also be keyboard accessible.

2. Enable VoiceOver.

Enable via Triple Click home button (if shortcut is enabled) or Settings > General > Accessibility > Voiceover: On Visual indication of focus is limited to input fields unless VoiceOver is running.

3. Enable Bluetooth keyboard.

4. Using only the Bluetooth keyboard, navigate through the entire screen to each interactive interface component, reveal hidden content, and activate all interactive components.

For a list of keyboard shortcuts for the iOS platform, refer t[o VoiceOver Gestures and Keystrokes.](#p52)

Use VO+Right arrow to cycle through all interactive controls and VO+Left Arrow to cycle backward through all

interactive elements. Use VO+Spacebar to activate a control or to interact with text in an editable text field. Use the Tab key to move between all input fields.

5. Note if the keyboard gets “trapped”, appears to loop or becomes stuck within an area of the application as a failure. Use touch gestures only in this situation to bypass the trap and continue testing.

6. Investigate any instances where the standard platform keyboard methods do not provide access to interactive elements.

16

Check if alternative keyboard access instructions are provided (in the application’s Help section or on the page).

Instructions may include extending standard keyboard command operations (e.g., getting out of a keyboard “trap”), and/or alternate keys. Verify that the alternative keyboard commands work.

Some applications may offer multiple ways to activate a function. Only one method of keyboard access is required.

Special access keys (such as Alt+O or Command+P) and redundant menu options are not required for compliance if

platform shortcuts work.

7. Complete form fields.

Enter text, select text in input fields, select (arrow and tab) different options from drop down lists, select and unselect checkboxes and radio buttons. Try to select the second or third option from a drop down list by keyboard only. Where multiple selections in a drop down list are possible, select multiple combinations. Where single finger Tap and Hold gestures provide interactive element access, ensure keyboard access is also available (to include standard copy/paste and cut in form fields).

To select text, you must first turn off quick navigation mode by pressing VO+Spacebar on the editable text field or press the left and right arrow keys simultaneously.

8. If a single finger Tap and Hold gesture reveals interactive content (such as copy/paste), ensure access is also provided through keyboard access.

An example of the single finger Tap and Hold gesture is a copy/cut/paste/select all. This will be applicable for most text input fields, but could also be used to perform actions such as a save or bookmark, for example.

2: KEYBOARD FOCUS TASKS- HOW TO TEST

1. Using the keyboard, put focus at the top of the screen and Tab through each screen, following the application’s visual focus (typically a dotted rectangle, highlight, or a vertical bar in a text field).

For a list of keyboard shortcuts for the iOS platform, refer t[o VoiceOver Gestures and Keystrokes.](#p52)

It is not a requirement that only interactive elements receive focus. For example, form instructions in text may receive focus by design. This is not a failure.

In forms, the focus may automatically shift to the next form field once valid text is entered (e.g. after three numbers are entered for an area code, the focus immediately shifts to the field for the next three numbers of a phone number.) The focus must be visible after shifting. The user must also be able to return to the prior field to check their entry.

Navigate to a screen, then place focus at the top of the screen.

Press Alt+Control+Right arrow to navigate via the focus order. Use Alt+Control+Left arrow to move backwards through the focus order.

2. Note any instances where the focus order is illogical.

Review the entire screen starting from the top of the screen by navigating through all of the elements using the keyboard to determine whether the order in which the different elements receive focus makes sense. If the focus order can cause confusion or errors for a user it may be necessary to consult with the application developer to confirm whether this focus order is intentional.

3. Note any instances of a loss of visual focus while Tabbing through the page or if the visual focus appears on the wrong element as a failure.

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Loss of focus should not occur while manually shifting focus through the page (using the TAB or arrow keys). The focus must be visible when it is placed on a pane, such as a scrolling license agreement that must be scrolled to review.

When a function that moves the focus is executed (such as from the skip link itself, or when hidden content is

revealed), it may be necessary to press Alt+Control+Right Arrow so focus becomes visible again. This is not considered a failure.

4. When hidden content is revealed, check that the visual focus was moved to the new content.

Move the focus to the control that reveals hidden content, activate the control with the keyboard, and determine whether focus is on the revealed content.

If a modal dialog box (requires user interaction to return to the application) is revealed, the visual focus must remain within the modal dialog box until the box is closed. If a dialog box behaves like a modal dialog box, test it as a modal dialog box.

If focus does not move to the revealed content, an accurate description of the content change must be provided. This description may be revealed in many ways, such as on screen text, tooltips, or a description on the element that reveals the hidden content. It may be necessary to advance the focus once to find the focus.

Use VO+Right arrow.

1.1 RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. An interactive element or function Test ID always applies.

[NC] if an interactive

[C] if all interactive

cannot be accessed or activated

[DNA] is not an

element cannot be

elements can be

by keyboard.

acceptable result.

accessed by keyboard.

accessed by keyboard.

[31(a), 31(f)]

B. A keyboard “trap” is found.

Test ID always applies.

[NC] if a keyboard “trap” [C] if a keyboard “trap”

[DNA] is not an

is found.

is not found.

[31(a), 31(f)]

acceptable result.

C. Non-standard or alternative

[DNA] if all interactive

[NC] if non-standard

[C] if non-standard

keyboard commands are required elements can be

keyboard commands are keyboard commands are

for access but are not

accessed with the

needed to access an

needed and they are

documented.

standard keyboard

interactive element and documented.

commands. (E.g. tab,

the commands are not

[31(a), 31(f)]

arrow keys, enter,

documented.

space, etc.)

18

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

D. Information/interactive elements [DNA] if no elements

[NC] if

[C] if

revealed by single finger Tap and

are revealed by a single information/interactive information/interactive

Hold gesture are not available to

finger Tap and Hold

elements revealed by

elements revealed by

keyboard-only users.

gesture. Note: This will single finger Tap and

single finger Tap and

apply to most text input Hold gesture are not

Hold gesture are

[31(a), 31(f)]

fields.

available to keyboard-

available to keyboard-

only users

only users

E. At any time, there is no visual

Test ID always applies.

[NC] if a loss of visual

[C] if the visual focus can

indication of the current focus

[DNA] is not an

focus occurs.

be determined at all

(loss of focus).

acceptable result.

times.

[31(a), 31(f)]

F. The visual focus appears on the

Test ID always applies.

[NC] if focus appears on [C] if focus always

wrong element.

[DNA] is not an

a different element than appears on the element

acceptable result.

the one that has

it is programmatically

[31(a), 31(f)]

programmatic focus.

on.

G. The visual focus does not remain

[DNA] if there are no

[NC] if focus leaves the

[C] if focus remains in

within a modal dialog box until

modal dialog boxes.

modal dialog box while

the modal dialog box

closed.

the box is open.

until the box is closed.

[31(a), 31(f)]

H. The visual focus does not move to [DNA] if there is no

[NC] if the focus does

[C] if focus moves to

revealed content and no

revealed content.

not move to the

revealed content OR a

description of the content change

revealed content AND a description of the

is provided.

description of the

content change is

content change is not

provided.

[31(a), 31(f)]

provided.

I.

The keyboard reading order is not Test ID always applies.

[NC] if the focus order is [C] if the focus order is

logical.

[DNA] is not an

not logical.

logical.

acceptable result.

[31(a), 31(f)]

Enter the test results into the DHS reporting tool.

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APPLICABLE 508 STANDARDS 1194.XX

31(a) Use without Vision

At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

31(f) Use with physical limitations

At least one mode of operation and information retrieval that does not require fine motor control or simultaneous actions and that is operable with limited reach.

20

2. SCREEN READER TEST

Descriptive information must be provided for all elements to enable assistive technologies to pass useful information on to its user. The descriptive label must include identification, status and purpose of the element.

All elements must have useful and complete descriptions.

2.1 ELEMENTS TEST

HOW TO TEST

1. Enable VoiceOver.

Enable via Triple Click home button (if shortcut is enabled) or Settings > General > Accessibility > Voiceover: On 2. Using gestures only, navigate (from top to bottom, left to right) each screen and find all elements.

Interact with each element to include filling out forms, selecting buttons, reading text, etc. For form fields, also find all associated instructions and cues. In addition, locate all non-text interface elements include images, text rendered as an image, tables, graphs, charts, audio files, animations and video files.

For a list of gestures for the iOS platform, refer [to VoiceOver Gestures and Keystrokes.](#p52)

3. Determine if sufficient speech output is provided for every element on each screen by listening to screen reader output and comparing it to “What To List For” outcomes in the [Elements table.](#p45)

i. Non-interactive Images

1. If it is a decorative image, nothing should be announced.

2. Repeat images must have consistent meaning.

3. Images that contain meaningful text should have that same text read aloud.

4. Interactive image elements should be tested under User Controls, Links and Interactive

Elements (iv).

ii. Decorative Non-interactive Elements

1. These could be symbols (such as a separator line), images, or other decorative elements

that developers have added to the app.

2. If the element is interactive AND meaningful, it should be tested under User Controls,

Links and Interactive Elements (iv.)

iii. Form fields and Hints

1. Complete form fields. If a single finger Tap and Hold gesture opens menu items such as

“copy”, “paste”, and “cut” (as found in most text input fields), make sure all menu items

can also be activated by gesture.

2. Hidden form fields should not be announced.

3. Disabled form fields are not required to be announced, but if they are, must note they

are disabled.

4. Read-only form fields must have sufficient element data read aloud.

5. Form fields must have a programmatic label.

a. Placeholder text for form field identification does not meet conformance.

Because users can enable/disable the hint property, the hint property does not

meet conformance for required control labels or status. (A hint can be

identified as it will be read after a short pause in VoiceOver’s speech output.)

b. Be sure to test items like “search” fields with and without text in the input field

to ensure the label is not just placeholder text.

iv. User Controls (Menus, Buttons, Toolbars, etc.), Links, and other Interactive Elements

1. Activate controls, other Interactive Elements and links. Verify they function properly

using gestures.

21

2. Each control and other Interactive Element must reflect its name and function, to

include alerting screen reader users of its name and that it is interactive (this could be

achieved in a number of ways, to include programmatically setting it as a “button”, or

adding label text to alert the user of the interactive control).

a. If a control announces its type twice (such as “Start button button”), this would

be considered a failure. This may indicate from a coding perspective, that the

control type has been included in the accessible name; however, control types

are handled via a different trait and to avoid redundancy, do not need to be

included in the accessible name.

3. If there are multiple User Controls or other Interactive Elements with the same visual

label, and context is necessary to understand purpose, the speech output must include

unique identifiers that describe each control’s purpose.

a. In instances where context is necessary to understand the purpose of a user

control other interactive element (such as multiple “Submit” buttons meaning

specific submissions based on location), these should be included in the name

of the element (and read aloud by the screen reader).

4. All links should have a name that matches the onscreen text and alerts the user to the

functionality of a “link”.

a. In instances where context is necessary to understand the purpose of a link,

context should be included in the name of the link (and read aloud by the

screen reader).

v. Text

1. Ensure all text can be accessed while using a screen reader and is correctly read aloud.

Note any instances of garbled or indiscernible text as a failure.

vi. Revealed content

1. Ensure all revealed content provides sufficient user information for interaction.

vii. Lists

1. Ensure the list is read aloud to include list structure and status indication (if applicable).

viii. Headings

1. Visual headings should also be programmatically labeled.

2. If there are at least 2 visual headings on the page, check that the programmatic heading

level structure is correct.

ix. Tables

1. Table headings should be announced.

In iOS, there is a rotor feature that can be used to quickly find programmatically set features such as headings, links, text and images. Elements that can be found using the rotor are noted in th[e Elements table in](#p45) the column “iOS Rotor Shortcut.”

4. Note any elements with multiple statuses which provides meaningful information for user interaction.

If a menu opens/closes and a user MUST have the status announced in order to understand how to interact with the screen, that menu should provide its status.

For items that can change status, but do not provide meaningful information via status, it is not necessary for them to announce current status (this would be for items such as a menu that is opened/closed).

5. Investigate any instances where elements cannot be accessed or cannot be accessed by standard platform

gesture methods.

This can include a gesture ‘trap’ or use of non-standard or alternative gesture commands that are required for access but are not documented. Note if the tester gets “trapped”, appears to loop, or becomes stuck within an area of the application as a failure. Use touch gestures in this situation to bypass the trap and continue testing.

If a single finger Tap and Hold gesture opens menu items such as “copy”, “paste”, and “cut”, make sure all menu items are also able to be activated by gesture. Control options triggered by physical manipulation of the device (such as a shake, tilt, or swipe to show menu) must also be accessible when the screen reader is enabled.

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To select text: Set the rotor to Edit, swipe up or down to choose Select or Select All, then double-tap. To cut, copy, or paste: set the rotor to Edit, select the text, swipe up or down to choose Cut, Copy, or Paste, then double-tap.

6. Note if the gesturing gets “trapped”, appears to loop or becomes stuck within an area of the application as a failure. Bypass the trap and continue testing.

2.1 RESULTS

Failure condition

Does Not

Not Compliant [NC]

Compliant [C]

Apply? [DNA]

Images

A. A meaningful image

[DNA] if there

[NC] if a meaningful

[C] if all meaningful images

does not have an

are no

image does not have an

have an equivalent

equivalent description meaningful

equivalent description.

description.

(purpose and function). images.

[31(a)]

Images

B. A decorative element is [DNA] if there

[NC] if a decorative image [C] if all decorative images

announced by the

are no

is announced by the

are not announced by the

screen reader.

decorative

screen reader.

screen reader.

images.

[31(a)]

Images

C. An image has

[DNA] if there

[NC] if an image has

[C] if all images have

inconsistent meaning.

are no images.

inconsistent meaning

consistent meaning

throughout the

throughout the application.

[31(a), 31(b)]

application.

Images

D. An image that contains [DNA] if there

[NC] if an image that

[C] if all images that contain

text does not have the are no images

contains text does not

text have all the text

same text announced

with text.

have the same text

announced by the screen

by the screen reader.

announced by the screen reader.

reader.

[31(a)]

Images

E. Any element that has

[DNA] if no

[NC] if an element with

[C] if all elements with

multiple statuses that

elements have

multiple statuses does

multiple statuses indicate

is meaningful for

multiple

not indicate its current

their current status.

interaction does not

statuses.

status.

indicate its current

status.

[31(a), 31(b)]

23

Failure condition

Does Not

Not Compliant [NC]

Compliant [C]

Apply? [DNA]

Form Fields

F. The screen reader

[DNA] if there

[NC] if the screen reader

[C] if the screen reader

output for form fields

are no form

output does not match

output matches all the form

(text field, checkbox,

fields.

the form field’s visual

field’s visual label or

radio button, etc.) does

label or does not include

includes complete

not match its visual

complete instructions and instructions and cues.

label or does not

cues.

include complete

instructions and cues.

[31(a)]

User

G. A user control, link, or

[DNA] if there

[NC] if a user control, link, [C] if all user controls, links,

Controls,

other interactive

are no user

and/or other interactive

and/or other interactive

Links and

element does not have controls, links,

element does not have a element have a descriptive

Other

a descriptive and

and/or other

descriptive and unique

and unique name and

Interactive

unique name and does interactive

name and does not

identifies their purpose.

Elements

not identify purpose

elements.

identify its purpose.

(to include alerting the

user of the interactive

function of the

control).

[31(a)]

Headings

H. Visually apparent

[DNA] if there

[NC] if a visually apparent [C] if all visually apparent

headings are not

are no visually

heading is not

headings are

programmatically

apparent

programmatically

programmatically identified.

identified.

headings on the identified.

page.

[31(a)]

Headings

I.

Programmatically

[DNA] if there

[NC] if programmatic

[C] if programmatic levels

identified heading

are no visually

levels for visually

on all visually apparent

levels do not match the apparent

apparent headings do not headings match the visual

visual outline.

headings on the match the visual

structure.

page. [DNA] if

structure.

[31(a)]

there is only 1

visually

apparent

heading on the

page.

24

Failure condition

Does Not

Not Compliant [NC]

Compliant [C]

Apply? [DNA]

Catch All

J. Every element does

[DNA] if all

[NC] if all elements do not [C] if all elements provide

not provide sufficient

failures were

provide sufficient

sufficient information for

information for user

captured under information for use

user operation.

operation (otherwise

Failure

operation.

not listed).

Conditions A-I.

[31(a)]

Gestures

K. An element or function Test ID always

[NC] if an interactive

[C] if all interactive

cannot be accessed or applies. [DNA] is element cannot be

elements can be accessed

activated by gesture.

not an

accessed by gesture.

by gesture.

acceptable

[31(a)]

result.

Gestures

L. A gesture “trap” is

Test ID always

[NC] if a gesture “trap” is [C] if a gesture “trap” is not

found.

applies. [DNA] is found.

found.

not an

[31(a)]

acceptable

result.

Gestures

M. Non-standard or

[DNA] if all

[NC] if non-standard

[C] if non-standard gesture

alternative gestur e

interactive

gesture commands are

commands are needed and

commands are

elements can be needed to access an

they are documented.

required for access but accessed with

interactive element and

are not documented.

the standard

the commands are not

gesture

documented.

[31(a)]

commands.

Gestures

N. Information/interactive [DNA] if no

[NC] if

[C] if

elements revealed by

elements are

information/interactive

information/interactive

single finger Tap and

revealed by a

elements revealed by

elements revealed by single

Hold gesture are not

single finger Tap single finger Tap and Hold finger Tap and Hold gesture

available to screen

and Hold

gesture are not available are available to screen

reader users.

gesture.

to screen reader users.

reader users.

[31(a)]

Enter the test results into the DHS reporting tool.

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APPLICABLE 508 STANDARDS 1194.XX

31(a) Use without Vision

At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

31(b) Use with Low Vision

At least one mode of operation and information retrieval that does not require visual acuity greater than 20/70 shall be provided in audio and enlarged print output working together or independently, or support for assistive technology used by people who are visually impaired shall be provided.

26

2.2 LAYOUT TEST

HOW TO TEST

1. With device Screen Reader enabled, change the screen from portrait to landscape by rotating the device.

Continue rotating the device 90 degrees to portrait then landscape, back to the initial screen position. Verify the screen reader announced the proper orientation of the screen.

Layout changes such as changes from landscape to portrait must be announced if they occur. If the app supports this layout change, the screen reader should announce this change.

This requirement is NOT that the app must support orientation change.

2.2 RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. Layout changes such as changes

[DNA] if app does not

[NC] if there is not

[C] If there is sufficient

from portrait to landscape or a

allow layout changes.

sufficient indication of

indication of layout

forced application direction are

layout change such as a change such as a change

not indicated or announced by

change from landscape

from landscape to

screen reader with sufficient

to portrait.

portrait.

information for user to orient

device.

[31(a)]

Enter the test results into the DHS reporting tool.

APPLICABLE 508 STANDARDS 1194.XX

31(a) Use without Vision

At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

27

3. VIDEO, AUDIO, AND MULTIMEDIA

This section addresses audio, video, animation and multimedia.

3.1 VIDEO-ONLY AND ANIMATION

Videos (without audio) and animation includes sequences of overlaid images, dynamic changes of state such as a moving speed dial, a chart illustrating dynamic flow changes from one state to another, etc. This requirement applies to visual/video information that is not accompanied by meaningful sounds.

Note: This test is different from the test for Multimedia (combined audio AND video). Files that have both video and meaningful audio are tested in Test Process 3.3 Multimedia. Do not test Multimedia here.

HOW TO TEST

1. Find interface components that play video-only or animated content.

2. Check that video-only content that starts automatically has a playback control (pause/stop).

Note: the control button(s) must also be tested under the Keyboard and Focus and Screen Reader tests.

3. Check that any animation that (1) starts automatically (2) lasts more than 5 seconds and (3) is presented in parallel with other content has a mechanism for the user to pause, stop, or hide it or to control the frequency of the update unless the auto-updating is part of an activity where it is essential.

An animation that occurs as part of a preload phase or similar situation can be considered essential if interaction cannot occur during that phase for all users and if not indicating progress could confuse users or cause them to think that content was frozen or broken.

4. Check that the information conveyed through animation or video is also available in accessible screen text or audio.

Animation or video must not be the only way to convey information.

5. The alternative equivalent description must be an accurate and complete representation of the video/animated content.

All relevant visual information must be included (e.g.: driver hands license to officer). Equivalent (unsynchronized) audio descriptions for video files are acceptable but not required.

3.1 RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. Video-only content that starts

[DNA] if there are no

[NC] if video-only

[C] if all video-only that

automatically does not have a

video files. [DNA] if

content that starts

starts automatically has

playback control.

there are no videos that automatically does not

a playback control.

start automatically.

have a playback control.

[31(a)]

28

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

B. Animation that starts

[DNA] if there is no

[NC] if animation that

[C] if all animation that

automatically, lasts more than 5

animation. [DNA] if

starts automatically,

starts automatically,

seconds and is presented in

there is no animation

lasts more than 5

lasts at least 5 seconds

parallel with other content does

that starts

seconds and is

and is presented in

not have a playback control or

automatically, lasts

presented in parallel

parallel with other

allow control of frequency for

more than 5 seconds, or with other content does content has a playback

update.

is presented in parallel

not have a playback

control or allows control

with other content.

control or allow control of update frequency.

[31(a)]

of frequency for update.

C. Video-only or animated content

[DNA] if there are no

[NC] if video-only or

[C] if all video-only and

does not have an equivalent text

videos or animations.

animated content does animated content has

or audio description.

not have an equivalent

an equivalent text or

text or audio

audio description.

[31(a)]

description.

Enter the test results into the DHS reporting tool.

APPLICABLE 508 STANDARDS 1194.XX

31(a) Use without Vision

At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

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3.2 AUDIO-ONLY

Audio-only files include speeches, soundbites, ambient (background) sounds, etc.

Note: This test is different from the test for Multimedia (combined audio AND video).Files that have both video and meaningful audio are tested in Test Process 3.3 Multimedia. Do not test Multimedia here.

HOW TO TEST

1. Find all interface components that play audio-only content.

Short sounds such as confirmation beeps and error notifications are not included in this requirement.

2. If the audio starts automatically and lasts for more than 3 seconds, check that the audio-only content has a playback control (pause/stop) or a mechanism to control audio volume independently from the overall system

volume level.

Note: the control button(s) must also be tested under the Keyboard and Focus and Screen Reader tests.

3. Find the associated transcript or description.

4. Play audio and check that the information conveyed through audio is also available in accessible screen text/transcript.

Audio must not be the only way to convey information.

The alternative equivalent description/transcript must be an accurate and complete representation of the audio-only content. All speech and relevant audio cues must be included (e.g.: doorbell rings, car honks, etc.)

3.2 RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. Audio content that plays

[DNA] if there are no

[NC] if audio content

[C] if all audio content

automatically and lasts for more

audio only files. [DNA] if that plays automatically that plays automatically

than 3 seconds does not have a

there are no audio only

and lasts for more than 3 and lasts for more than 3

playback control or a mechanism to files that start

seconds does not have a seconds has a playback

independently control audio

automatically and last

playback control nor a

control or a mechanism

volume.

for more than 3 seconds. mechanism to

to independently control

independently control

audio volume.

[31(c)]

audio volume.

B. An audio file does not have an

[DNA] if there are no

[NC] if an audio-only file [C] if all audio-only files

equivalent text

audio only files.

does not have an

have an equivalent text

description/transcript.

equivalent text

description/transcript.

description/transcript.

[31(c)]

Enter the test results into the DHS reporting tool.

30

APPLICABLE 508 STANDARDS 1194.XX

31(c) Use without Hearing

At least one mode of operation and information retrieval that does not require user hearing shall be provided, or support for assistive technology used by people who are deaf or hard of hearing shall be provided.

31

3.3 MULTIMEDIA

Multimedia is a presentation consisting of time-synchronized media (primarily video and audio).

HOW TO TEST

1. Turn Captions on through the OS Accessibility properties.

Settings > General > Accessibility> Subtitles and Captioning- Enable Closed Captioning + SDH

Set your caption options to something unique like yellow on blue text, so it is obvious that the caption options are adopted when testing.

2. Find interface components that play synchronized media.

This includes streaming media and streaming live events. Include only files that have meaningful visual information that is synchronized with meaningful audio information. Examples include webcasts, press conferences, instructional

videos, and online training presentations.

3. If the multimedia starts automatically, check that the multimedia content has a playback control (pause/stop).

Note: the control button(s) must also be tested under the Keyboard and Focus and Screen Reader tests.

4. Enable captions in the multimedia player. Play the multimedia.

Check captions: All relevant audible information (dialog and sounds) from the multimedia should be complete,

accurately displayed and synchronized with the multimedia audio.

5. Check that the application adopted the OS Accessibility Caption settings, that the application did not crash, and that all functionality is still available.

6. Enable the audio description feature in the multimedia player. Play the multimedia.

Check audio descriptions: All relevant visual information from the multimedia should be complete, verbally described accurately and synchronized with the multimedia video.

7. Synchronized alternatives are required. Transcripts and separate lists of visual events do not meet this requirement.

3.3. RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. Multimedia content that starts

[DNA] if there are no

[NC] if multimedia

[C] if all multimedia

automatically does not have a

multimedia files. [DNA]

content that starts

content that starts

playback control.

if there are no

automatically does not

automatically has a

multimedia files that

have a playback control. playback control.

[31(a), 31(c)]

start automatically.

32

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

B. Synchronized captions are not

[DNA] if there are no

[NC] if a multimedia file [C] if all multimedia files

provided for multimedia.

multimedia files.

does not provide

provide synchronized

synchronized captions.

captions.

[31(c)]

C. The provided captions for

[DNA] if there are no

[NC] if the provided

[C] if the provided

multimedia are not equivalent.

multimedia files. [DNA]

captions for a

captions for all

if captions are not

multimedia file are not

multimedia files are

[31(c)]

provided.

equivalent.

equivalent.

D. Synchronized audio descriptions

[DNA] if there are no

[NC] if a multimedia file [C] if all multimedia files

are not provided for multimedia.

multimedia files.

does not provide

provide synchronized

synchronized audio

audio descriptions

[31(a)]

descriptions.

E. The provided audio descriptions

[DNA] if there are no

[NC] if the provided

[C] if the provided audio

are not equivalent.

multimedia files. [DNA]

audio descriptions for a

descriptions for all

if audio descriptions are multimedia file are not

multimedia files are

[31(a)]

not provided.

equivalent.

equivalent.

F. The application did not adopt all of [DNA] if there are no

[NC] if the application

[C] if iOS Caption

the iOS Caption settings.

multimedia files. [DNA]

disrupts accessibility

settings are not

if there are no captions. settings. Note: This will

disrupted by the

[31(c)]

also fail 7.H.

application.

Enter the test results into the DHS reporting tool.

APPLICABLE 508 STANDARDS 1194.XX

31(a) Use without Vision

At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

31(c) Use without Hearing

At least one mode of operation and information retrieval that does not require user hearing shall be provided, or support for assistive technology used by people who are deaf or hard of hearing shall be provided.

33

4. COLOR AND CONTRAST

4.1 COLOR DEPENDENCE

Color dependence is using color as the sole means to convey information. For example, a single icon that is green for ‘on’, orange for ‘standby’, and red for ‘off’ is color dependent.

Color must not be the only means of conveying information, indicating an action, prompting a response, or indicating status. Information conveyed through color must also be provided in text on the screen.

HOW TO TEST

1. If there is information that is being provided by color, check to see if the same information is represented textually on the screen or through other visual (non-color) differentiation (shape, position, size).

4.1 RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. Information is provided only by

[DNA] if color is not

[NC] if color is the only

[C] if color is used but is

color.

used to provide

method used to provide not the only method to

information.

information.

provide information.

[31(a)]

Enter the test results into the DHS reporting tool.

APPLICABLE 508 STANDARDS 1194.XX

31(a) Use without Vision

At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

34

4.2 CONTRAST

There must be contrasting colors/shades at a ratio of at least 4.5:1 for discerning between background and foreground content.

HOW TO TEST

1. Visually examine the content displayed on the page for areas that may have low background to foreground

contrast. Include meaningful screen text and images of meaningful text.

Text contained in logos is exempt from this requirement.

2. Take a screenshot and transfer it to a PC.

3. Use the Colour Contrast Analyser picker tool to select foreground and background colors from the screen.

The contrast ratio must be at least 4.5:1.

4.2 RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. The contrast ratio is less than 4.5:1 [DNA] if there is no

[NC] if the contrast ratio [C] if the contrast ratio

for content background and

text.

is less than 4.5:1 when

is 4.5:1 or greater when

foreground colors.

comparing the

comparing all

background and

background and

[31(b)]

foreground colors. (If

foreground colors.

NC, always document

the contrast ratio.)

Enter the test results into the DHS reporting tool.

APPLICABLE 508 STANDARDS 1194.XX

31(b) Use with Low Vision

At least one mode of operation and information retrieval that does not require visual acuity greater than 20/70 shall be provided in audio and enlarged print output working together or independently, or support for assistive technology used by people who are visually impaired shall be provided.

35

5. FLASHING

The term ‘flickering’ encompasses interface elements that flash, blink, flicker repetitively, or elements that scroll (e.g., marquee text).

Current Section 508 requirements do not permit elements to flash or flicker at frequencies between 2Hz and 55Hz. To incorporate the expected update to this requirement, this flashing test adopts the WCAG 2.0 frequency restriction to below 3Hz.

HOW TO TEST

1. Visually check for any flashing or blinking interface elements or scrolling text.

Currently there is no way to accurately test the rate of flashing or flickering on mobile devices and thus use of flashing or flickering elements will be found not compliant.

Scrolling text should also be tested under Test 2.1: Screen Reader test.

5. RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. If the page contains flashing, flickering, [DNA] if there are no

[NC] if flashing,

[C] Does not apply.

or scrolling.

elements that are

flickering, or scrolling

flashing, flickering,

occurs.

[21(k)]

scrolling, etc.

Enter the test results into the DHS reporting tool.

APPLICABLE 508 STANDARDS 1194.XX

21(k) Blinking Objects

Software shall not use flashing or blinking text, objects, or other elements having a flash or blink frequency greater than 2

Hz and lower than 55 Hz.

36

6. TIMEOUTS

Messages and/or instructions to the user requesting their response within a given time are typically associated with apps that require a secure login. This includes both server time-outs and client side security time-outs.

Note: The accessibility of the alert/pop up and option to request more time is tested in the Keyboard and Screen Reader tests (Tests 1 and 2) and should not be tested here.

HOW TO TEST

1. Inspect the app to determine if there is a timeout function from the application’s documentation, or by leaving the session inactive for a period of time.

2. If a timeout is about to occur, an alert must be posted for at least 20 seconds and the user must have the option to request more time.

6. RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. The application timed out without

[DNA] if application

[NC] if application times [C] if application

notification.

does not time out.

out without notification. provides notification

before timing out.

[31(a), 31(b), 31(c), 31 (d), 31(f)]

B. The application’s time out notification [DNA] if application

[NC] if application’s time [C] if application’s time

is displayed for less than 20 seconds. does not time out.

out notification is

out notification is

[DNA] if no time out

displayed for less than

displayed for at least 20

[31(f)]

notification is provided. 20 seconds before

seconds before timing

timing out.

out.

C. The application timed out without an

[DNA] if application

[NC] if application timed [C] if application

option to request more time.

does not time out.

out without providing

provides user an option

user an option to

to request more time

[31(a), 31(b), 31(c), 31 (d), 31(f)]

request more time.

before timing out.

Enter test results into the DHS reporting tool.

APPLICABLE 508 STANDARDS 1194.XX

31(a) Use without Vision

At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

31(b) Use with Low Vision

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At least one mode of operation and information retrieval that does not require visual acuity greater than 20/70 shall be provided in audio and enlarged print output working together or independently, or support for assistive technology used by people who are visually impaired shall be provided.

31(c) Use without Hearing

At least one mode of operation and information retrieval that does not require user hearing shall be provided, or support for assistive technology used by people who are deaf or hard of hearing shall be provided.

31(d) Use with Hard of Hearing

Where audio information is important for the use of a product, at least one mode of operation and information retrieval shall be provided in an enhanced auditory fashion, or support for assistive hearing devices shall be provided.

31(f) Use with physical limitations

At least one mode of operation and information retrieval that does not require fine motor control or simultaneous actions and that is operable with limited reach.

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7. BUILT-IN ACCESSIBILITY FEATURES

Operating System (OS) accessibility features are applications that are separate from the software being tested. The features are usually found and activated in the accessibility section of the Settings menu on the device.

OS user-configurable accessibility appearance settings, functions, and assistive technologies must not be disrupted or disabled by the software application.

Note: The navigation instructions to access these features may differ depending on OS versions.

HOW TO TEST

1. Enable accessibility settings.

Settings > General > Accessibility (Note: AssistiveTouch and Zoom should be operated separately from each other).



Larger Text



Display Accommodations > Invert Colors



Zoom



AssistiveTouch



Speech > Speak Screen



Voice Input (not part of Accessibility Menu, but part of onscreen keyboard)

2. Enable Larger Text.

Drag the slider to the far right (largest text size possible).

Restart the app. Test to see if the app adopted large text wherever text is present within the app.

Close the app. Disable Larger Text.

Settings > General > Accessibility> Larger Text: Off

3. Enable Invert Colors.

Settings > General > Accessibility > Display Accommodations >Invert Colors: On

4. Enable Zoom feature.

Settings > General > Accessibility > Zoom: On



If Zoom appears on but the screen does not magnify, tap three fingers two times.



To adjust the zoom level, tap three fingers two times and then on the third time hold down on the touch

screen. Move three fingers up to increase the magnification or down to decrease the magnification.



Try to make the zoom level approximately 200% of the normal size. That means the normal screen would

take up approximately 4 magnified screens.



To move around the screen, drag three fingers around the screen.

5. Restart the application.

39

6. Check that the application adopted the invert colors appearance and the application did not crash and that all functionality is still available.

If inverse colors are not adopted, check if the application offers at least 4 of its own color options.

7. Check that the application adopted the zoom/magnification appearance and the application did not crash and all functionality is still available.

8. Close application. Disable Zoom and Invert Colors.

Settings > General > Accessibility > Zoom: Off

Settings > General > Accessibility > Display Accommodations > Invert Colors: Off

9. Enable AssistiveTouch.

Settings > General > Accessibility > AssistiveTouch: On

 AssistiveTouch allows you to control apps using one touch point such as a finger or a stylus that supports

capacitance-based screens.

 To perform a gesture such as a pinch zoom, touch the AssistiveTouch menu icon, then choose favorite, then

choose the pinch gesture icon.

 Next, drag the pinch placeholders to the desired location and then touch and drag the endpoints to the

desired locations – this will trigger the pinch gesture.

10. Enable Speak Screen and Highlight Content.

Settings > General > Accessibility > Speech >Speak Screen: On

Highlight Content: On

Select Words and Sentences

Sentence Highlighting Style: Underline

11. Restart the application.

12. Check that the application allows the AssistiveTouch icon to appear and the application did not crash and all functionality is still available.

13. Using two fingers, swipe from the top of the screen down in one gesture. Check that all items on the page are read aloud and highlighted in sync with the speech output. Note any instances where items are not read or not read in sync as a failure.

14. Close the application and disable AssistiveTouch and Speak Screen.

Settings > General > Accessibility > AssistiveTouch: Off

Settings > General > Accessibility > Speech > Speak Screen: Off

15. Ensure Enable Dictation is On. Find all non-character disappearing text input fields (such as

text fields, subject/body of an email, etc.).

Settings > General > Keyboard > Enable Dictation: On

Note: Do not include text input fields here that do not display the characters, such as password

fields. These are excluded from this test.

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Put focus in the non-character disappearing text input field, then select the “microphone” input on your onscreen keyboard and dictate into the text field. Verify that the application allows you

to utilize the microphone for text input.

7. RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. The app did not completely adopt [DNA] if the app has no [NC] if all text is not

[C] if all text is enlarged

larger text.

text.

enlarged to setting

to setting specifications.

specifications.

[31(b)]

B. The application did not adopt the [DNA] is not an

[NC] if the application

[C] if application adopts

inverse color settings.

acceptable result.

does not adopt the

the inverse colors.

inverse colors.

[31(b)]

C. The application did not adopt the [DNA] is not an

[NC] if the application

[C] if application adopts

OS invert colors, or the application acceptable result.

does not adopt the OS

OS invert colors options

does not offer at least 4 color

invert colors or does not OR offers at least 4 color

options.

offer at least 4 color

options.

options.

[31(b)]

D. Text of application did not enlarge [DNA] is not an

[NC] if text of the

[C] if all text of the

or became illegible when enlarged acceptable result.

application did not

application enlarged

with zoom.

enlarge or became

and remains legible

illegible when enlarged. when enlarged.

[31(b)]

E. AssistiveTouch functionality was

[DNA] is not an

[NC] if AssistiveTouch

[C] if AssistiveTouch

disrupted in the application

acceptable result.

does not work in the

functionality works in

application.

the application.

[31(f)]

F. Speak Screen did not read the

[DNA] is not an

[NC] if Speak Screen did [C] if Speak Screen read

entire screen or highlighting was

acceptable result.

not read the entire

the entire screen and

not in sync with the audio.

screen or highlighting

highlighting was in sync

was not in sync with the with the speech output.

[31(b)]

speech output.

41

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

G. The application did not allow user [DNA] if the app has no [NC] if the application

[C] if the application

to utilize the microphone for text

text input fields. [DNA] did not allow user to

allows user to utilize the

input.

if the app only has

utilize the microphone

microphone for text

character-disappearing

for text input.

input.

[31(f)]

form fields.

H. The application disrupted any of

[DNA] is not an

[NC] if the application

[C] if all OS Accessibility

the OS Accessibility options

acceptable result.

disrupts any of the OS

options are not

(VoiceOver, Zoom, Larger Text,

Accessibility options.

disrupted by the

Invert Color, AssistiveTouch, Speak

application.

Screen, Caption settings).

[31(a), 31(b), 31(c ), 31(d), 31(f)]

Enter test results into the DHS reporting tool.

APPLICABLE 508 STANDARDS 1194.XX

31(a) Use without Vision

At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

31(b) Use with Low Vision

At least one mode of operation and information retrieval that does not require visual acuity greater than 20/70 shall be provided in audio and enlarged print output working together or independently, or support for assistive technology used by people who are visually impaired shall be provided.

31(c) Use without Hearing

At least one mode of operation and information retrieval that does not require user hearing shall be provided, or support for assistive technology used by people who are deaf or hard of hearing shall be provided.

31(d) Use with Hard of Hearing

Where audio information is important for the use of a product, at least one mode of operation and information retrieval shall be provided in an enhanced auditory fashion, or support for assistive hearing devices shall be provided.

31(f) Use with physical limitations

At least one mode of operation and information retrieval that does not require fine motor control or simultaneous actions and that is operable with limited reach.

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8. ACCESSIBLE ALTERNATIVE

Alternative versions for accessibility are permitted only when the primary application cannot be made compliant due to technology limitations and business requirements. The alternative version must provide the same information as the primary page.

HOW TO TEST

1. Determine if any alternative versions of the mobile app are provided.

2. Check that the alternative contains equivalent information as the mobile app.

Compare the content of the mobile app and the alternative, noting any information differences. Ensure that

dynamic content are also dynamically updated on the accessible version.

3. Perform all applicable tests for the accessible version and mark the appropriate test results.

8. RESULTS

Failure condition

Does Not Apply? [DNA] Not Compliant [NC]

Compliant [C]

A. An alternative does not contain

[DNA] if there is only

[NC] if an alternative

[C] if all alternatives

equivalent information as the

one version of the

does not contain

contain equivalent

primary application.

application.

equivalent information

information as the

as the primary.

primary.

[31(a), 31(b), 31(c), 31(d), 31(e), 31(f)]

B. The primary application can be

[DNA] if there is only

[NC] if the primary can

[C] if the primary cannot

made compliant.

one version of the

be made compliant.

be made compliant.

application.

[31(a), 31(b), 31(c), 31(d), 31(e), 31(f)]

Enter test results into the DHS reporting tool.

APPLICABLE 508 STANDARDS 1194.XX

31(a) Use without Vision

At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

31(b) Use with Low Vision

At least one mode of operation and information retrieval that does not require visual acuity greater than 20/70 shall be provided in audio and enlarged print output working together or independently, or support for assistive technology used by people who are visually impaired shall be provided.

31(c) Use without Hearing

43

At least one mode of operation and information retrieval that does not require user hearing shall be provided, or support for assistive technology used by people who are deaf or hard of hearing shall be provided.

31(d) Use with Hard of Hearing

Where audio information is important for the use of a product, at least one mode of operation and information retrieval shall be provided in an enhanced auditory fashion, or support for assistive hearing devices shall be provided.

31(e) Use without Speech

At least one mode of operation and information retrieval that does not require user speech shall be provided, or support for assistive technology used by people with disabilities shall be provided.

31(f) Use with Physical Limitations

At least one mode of operation and information retrieval that does not require fine motor control or simultaneous actions and that is operable with limited reach.

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ELEMENTS TABLE

What to Listen For

Element Type

iOS Specific Output

iOS Rotor

Shortcut

 Unique and descriptive

 Unique and descriptive label to

Activity

label to match visual

match visual information

Indicator/Progress

information

 Current progress value

Bar

 Note of whether or not

announced (or will say “in

activity is occurring

progress”/”halted”)

 Unique and descriptive

 “Alert”

Alert/Popup

speech output to match

 Unique and descriptive speech

visual information

output to match visual

 Includes the word “alert” or

information

“popup”

 If a time out: an alert must be

 If a time out: an alert must

posted for at least 20 seconds

be posted for at least 20

and the user must have the

seconds and the user must

option to request more time

have the option to request

more time read aloud

 Unique and descriptive

 Unique and descriptive speech

Animation

speech output to match

output to match visual

visual information to

information

include note that it is a

 To include the note that it is an

graphic or animation

image

 Unique and descriptive title

 Unique and descriptive title to

App Name

to match visual information

match visual information (to

(associated with

(to describe app)

describe app)

App icon)

 Unique and descriptive

 “Selected” if selected

Button (to include

label that matches text

 Unique and descriptive label that “Buttons”,

play/pause/stop,

(supplemental information

matches text or image

“Static Text”

stepper, sort)

might also be read to

description

describe the button)

 Supplemental information might

 Note that is it a “button”

also be read to describe the

 Its value/state (to include

button such as name of row if in

sufficient information for

a table

buttons that change from

 “Button” “popup” or “button

play to pause)

image”

 If the element has a

 “Dimmed” if button is

variable status, the current

unavailable

status must be announced

 Hint will be read if available

45

What to Listen For

Element Type

iOS Specific Output

iOS Rotor

Shortcut

 Unique and descriptive

 Unique and descriptive name

Container

name that matches visual

that matches visual information

“Containers”

information within

within container should be read,

container should be read

not container itself

 Unique and descriptive

 Unique and descriptive title to

Custom Interface

name that matches visual

match visual information

“Form

Control (e.g.

information to include

Controls”,

Calendar, clock)

value/state

“Static Text”

 Unique and descriptive

 Unique and descriptive name

Drawer/Slide Out

name that matches visual

that matches visual information.

“Buttons”

Menu (e.g.

information

 Note: user will most likely see a

Navigation)

slide menu in iOS for this.

 Unique and descriptive

 Descriptive label and will note

Folder

name that matches visual

“folder” and how many items are

information

contained within folder

 Unique and descriptive

 Unique and descriptive label that

Form Field: Check

label that matches visual

matches visual information and

“Form

box

information and

instructions

Controls”

instructions

 “Checkbox”

 “Checkbox” should be

 Will always say “Checked” or

announced

“Not Checked” to indicate state

 State should be indicated

 “Selected” will be announced

 Hidden form fields should

first

not be announced

 “Dimmed” will be announced if

 Disabled form fields do not

not enabled

require a form name to be

announced

 Read-only form fields

cannot be edited by the

user, but sufficient element

data must be read aloud

46

What to Listen For

Element Type

iOS Specific Output

iOS Rotor

Shortcut

 Unique and descriptive

 Unique and descriptive label to

Form Field: Radio

label that matches visual

match visual information (can

“Form

button

information and

include widget, etc. to provide

Controls”

instructions (“Radio button”

supplemental information)

should be announced)

 Will always say “Radio Button”

 State should be indicated

 Will always say “Checked” or

 Hidden form fields should

“Not Checked” to indicate state

not be announced

 “Selected” will be announced

 Disabled form fields do not

first

require a form name to be

 “Dimmed” will be announced if

announced

not enabled

 Read-only form fields

cannot be edited by the

user, but sufficient element

data must be read aloud

 Unique and descriptive

 Unique and descriptive label that

Form Field: Text

label that matches visual

matches visual information and

“Form

Field (blank, with

information and

instructions

Controls”

placeholder or

instructions

 “Text Field”

inserted text)

 State should be indicated

 For editing, will announce “is

 If the element has a

editing”, and any placeholder

variable status, the current

text or text that user has typed in

status must be announced

 “Selected” will be announced

 Hidden form fields should

first

not be announced

 “Dimmed” will be announced if

 Disabled form fields do not

not enabled

require a form name to be

 Character limit must be

announced

announced if available

 Read-only form fields

cannot be edited by the

user, but sufficient element

data must be read aloud

 N/A

 iOS should have a table layout in

Grid Layout/View

lieu of grid view. Please see the

Table row

47

What to Listen For

Element Type

iOS Specific Output

iOS Rotor

Shortcut

 Unique and descriptive

 Unique and descriptive label that

Heading (text)-if a

label that matches visual

matches visual information

“Headings”,

heading is noted

information

 “Heading level X”

“Landmarks”

visually, must be

 “Heading” should be read

 Supplemental information such

noted

 Supplemental information

as ARIA Landmarks might be read

programmatically

such as Heading Level

aloud such as “main” and

number should be set if

“landmark”

there are several heading

levels

 Headers should be used

logically (not skipping from

Heading 3 to Heading 1 to

Heading 5 if visual structure

does not support that

order)

 Supplemental information

read aloud will not inhibit

compliance unless it is

confusing for the user

 If a hint exists, ensure that

 Hints are programmatically

Hints

sufficient and supplemental

available in iOS to provide

“Hints”

information (only) is

supplemental information on

provided

interacting with controls

 The hint should not contain

 These are optional; necessary

necessary information for

information for user interaction

user interaction

should not be contained in these

 A hint is announced after a 2

second pause after reading

name/value/trait

 Unique and descriptive

 Unique and descriptive name

Image

name that matches visual

that matches visual information

“Text field

information

 “Image”

images”

 “Image”

 If it is a decorative image

that has no meaning,

nothing should be

announced; images must

have consistent meaning

48

What to Listen For

Element Type

iOS Specific Output

iOS Rotor

Shortcut

 Unique and descriptive title

 Unique and descriptive name

Link

to match visual information,

that matches visual information

“Links”, “In-

“link”

 “Link”

page links”,

 iOS will announce if the link

 iOS will announce “visited”,

“Visited links”,

has been visited or not

“link” if the link has already been

“Non-visited

 Supplemental information

visited

links”

read aloud will not inhibit

compliance unless it is

confusing for the user

 Unique and descriptive title

 Unique and descriptive title to

List

to match visual information

match visual information

“Lists”,

 Will note number of items

 Will note number of items in list

“Characters,

in list

 Could include “Showing rows X of words, lines”

 If the element has a

X” but typically will not note

variable status, the current

something like “dropdown”

status must be announced

 “List start” and “list end” will be

announced

 “Selected” will be read first if

item selected

 Current page number out of

 Current page number out of total

Page Control

total number available will

number available will be

be announced or equivalent

announced or equivalent

accessible and unique name

accessible and unique name to

to identify page

identify page

 We currently do not test for

 N/A

Page Titles

page titles

 Unique and descriptive

 “Picker Item Adjustable”

Picker Item

name that matches visual

 The option that is currently

information

selected on screen should be

announced, followed by the

order of the selected item in the

provided set of options (e.g. “2 of

6”) if they exist

 “Dimmed” if disabled

 Unique and descriptive

 “Search Field”

Search Bar/Field

name that matches visual

 Placeholder text or text entered

“Search

information

into the field

Fields”, “Form

 “Is editing” if editing

Controls”

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What to Listen For

Element Type

iOS Specific Output

iOS Rotor

Shortcut

 Unique and descriptive

 Unique and descriptive title to

Seek Bar/Control

name that matches visual

match visual information to

information

include progress/value

 Descriptive name to signify

 “Skip to [main/page] content”

Skip Link

skip link navigation after

 “In page link”

“In-page links”

Navigation

landing on screen

 This should read similar to a

link

 Unique and descriptive

 Unique and descriptive name

Slider (e.g.

name that matches visual

that matches visual information

volume, video

information

 May say “up” if noting video

track position)

progress

 ”Adjustable”, current state of the

slider

 “Dimmed” if disabled

 Unique and descriptive

 Unique and descriptive name

Static Text

name that matches visual

that matches visual information

information

 Static text will ONLY announce

the words and will not announce

any function

 Unique and descriptive

 Unique and descriptive title to

Status Bar Item

name that matches visual

match visual information

information

 “Status bar item”

 Unique and descriptive

 Unique and descriptive name

Switch/Toggle

name that matches visual

that matches visual information

“Buttons”

information

 “Switch button”

 “On” or “off”

 “Dimmed” if unavailable

 Unique and descriptive

 Unique and descriptive name

Tab

name that matches visual

that matches visual information

information

 “Tab”

 “Tab”

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What to Listen For

Element Type

iOS Specific Output

iOS Rotor

Shortcut

 Unique and descriptive

 “Selected” will be announced if

Table

name that matches visual

selected

“Tables”

information (to include

 Unique and descriptive name

“table”, “header” for

that matches visual information

header column/row)

 If cell has an interaction “button”

 Read order must be correct

will be announced

and cell association must be

 Value will be announced

clear

 Currently a row header will not

announce “header” but will

announce row number

 For column header: unique and

descriptive name that matches

visual information, “header” will

be announced (if top left cell

blank, headers might be read

incorrectly and will fail)

 Unique and descriptive

 Unique and descriptive output

Text

output that matches visual

that matches visual information

“Characters”,

information

“Words”,

 Supplemental information

“Lines”,

read aloud will not inhibit

“Landmarks”

compliance unless it is

confusing for the user

 Unique descriptive name

 Unique descriptive name for

Toolbar

for toolbar

toolbar itself may be announced

 “Toolbar”

first

 “Dimmed/disabled” if

 “Toolbar”

disabled

 “Dimmed” if disabled

 Unique and descriptive

 “Video”

Video/Video View

name that matches visual

information

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IOS GESTURES AND KEYSTROKES

HOW TO TAKE A SCREENSHOT ON IOS

Press the Home + Power button

VOICEOVER KEYSTROKES

Keys

Action

Control+Option (Alt)

VoiceOver Key (VO)

VO + Left or Right, Left Select previous or next item

or Right arrow

VO + Up or Down, Up, Perform or move to the selected rotor option

or Down

VO + Space

Activate the selected item. (open app, press button)

VO + H

Go to home screen

Escape

Go back, cancel, close pop-up

VO + H 2 times

Open/close multitask pane

Cmd + Tab

Switch to next app or include Shift for previous

Control

Pause/resume speech

VO + A

Read all from first object in selected area

VO + B

Read all from selected item

VO + M

Move to status bar

VO + K

Start VoiceOver training, Escape to exit

VO + F

Search and go to match with Enter

VO + G

Next search match, hold Shift for previous

Left Arrow + Right

Enable or disable quick navigation

Arrow

Shift + Up/Down Arrow Select options from a picker

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Keys

Action

CTRL+ Up/Down Arrow Moves focus to first (up arrow) or last (down arrow) element on the screen

Left + Right Arrow

Turn Quick Nav “On”

Quick Nav On then Alt + Move to next or previous horizontal screen/page

Left/Right Arrow

Quick Nav On then Alt + Move/scroll up or down the screen/page

Up/Down Arrow

Quick Nav On then

Control + Left/Right

Go to next or previous container/area

Arrow

VOICEOVER TEXT FIELD COMMANDS

Quick Nav must be OFF to use these commands

Keys

Action

Left or Right Arrows

Move cursor by character

Up or Down Arrows

Move cursor by line

Option + Left and Right Move cursor by word

Arrow

Control or Command + Move cursor by line

Left or Right

Shift+ Arrow keys

Select text

Cmd + A

Select all

Cmd + C

Copy selection

Cmd + X

Cut selection

Cmd + V

Paste

Cmd + Z

Undo

Eject

Show/Hide screen keyboard

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VOICEOVER GESTURES

Gesture

Action

Three-finger triple

tap—If zoom is

enabled, this becomes a Toggle Screen Curtain (will turn the visual display off)

three-finger quadruple

tap.

Touch or move around Speak and select the control under your finger

the screen

Tap 2 times fast

Activate the selected item. (open app, press button)

Tap 2 times and hold

Activate “drag-mode” (move icons, swipe-delete)

Tap 3 times fast

Double press control

Swipe Left or Right

Select the previous or next control

Perform or move to the selected rotor option, in character mode the allows you to go

Swipe Up or Down

letter by letter

Hold 1 finger & tap with Select when dragging, activate with tap (aka split-tap)

another

Tap once with two

Pause/resume speech

fingers

Tap 2 times fast with

Perform special action

two fingers

Tap 2 times and hold

Add label to selected item

with two fingers

Tap 3 times with two

Open Item Chooser for current area

fingers

Swipe up with two

Read all from first object in selected area

fingers

Swipe down with two Read all from selected item

fingers

Scrub back and forth

Go back, cancel, close pop-up

with two fingers

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Gesture

Action

Pinch out/in with two Select/deselect

fingers

Hold and twist left or

Select the next or previous rotor item

right with two fingers

Tap once with three

Speaks the current page number and position

fingers

Swipe Left or Right with Move to previous or next horizontal screen/page

3 fingers

Set the rotor to Edit,

swipe Up or Down to

To select text

choose Select or Select

All, then double-tap

Set the rotor to Edit,

select the text, swipe

Up or Down to choose To cut, copy, or paste

Cut, Copy, or Paste,

then double-tap.

ZOOM GESTURES

Gesture

Action

Tap 2 times fast with

Toggle Zoom (when Zoom is on); else Toggle speech on/off (good for braille use)

three fingers

Tap 3 times fast with

Toggle speech on/off (good for braille use) (when Zoom is on)

three fingers

Swipe Left or Right with Move to previous or next horizontal screen/page

three fingers

Swipe Up or Down with Move/scroll down or up (like moving a paper)

three fingers

Tap the upper half with Select the first item in the area (may be affect by multitasking gestures be on – iPad only) 4 fingers

Tap the lower half with Select the last item in the area (may be affect by multitasking gestures be on – iPad only) 4 fingers

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ADDITIONAL GESTURE AND KEYBOARD COMMAND RESOURCES FOR IOS:

<http://www.voiceover-easy.net/References/GestureList.aspx>

<http://audiblesight.com/voiceover-gesture-keyboard-commands/>

<http://axslab.com/articles/ios-voiceover-gestures-and-keyboard-commands.php>

<http://support.sas.com/misc/accessibility/education/ios/quickref.html>

Beginner gestures video[: https://www.youtube.com/watch?v=WKzdHH\_kNcw](https://www.youtube.com/watch?v=WKzdHH_kNcw)

Advanced gestures video[: https://www.youtube.com/watch?v=FP\_NVUaKx9s](https://www.youtube.com/watch?v=FP_NVUaKx9s)

DEVELOPER RESOURCES:

<https://developer.apple.com/accessibility/ios/>

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DOCUMENT CONTENT CHANGE LOG

VERSION 1.0, APRIL 2017

Initial version.

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