EAC Decision on Request for Interpretation 2016-01 (Display Pixel Pitch)

Voluntary Voting System Guidelines 1.1, Volume I, Section 3.2.5.a.iv

Date:

June 28, 2016

Questions:

1. What minimum display pixel pitch must a manufacturer use to the meet the requirement of Section 3.2.5?
2. Is the standard absolute or can allowances be made similar to those set forth in EAC Decision on Request for Interpretation 2015-04 (Visual Display Characteristics; Minimal display area).

Section(s) of Guidelines:

3.2.5 Visual display characteristics

The requirements of this section are designed to minimize perceptual difficulties for the voter. Some of these requirements are designed to assist voters with poor reading vision. These are voters who might have some difficulty in reading normal text, but are not typically classified as having a visual disability and thus might not be inclined to use the Acc-VS.

a. If the voting system uses an electronic display screen as the primary visual interface for the voter, the display shall have the following characteristics:

i. Flicker frequency NOT between 2 Hz and 55 Hz.
ii. Minimum display brightness: 130 cd/m2
iii. Minimum display darkroom 7×7 checkerboard contrast: 150:1
iv. Minimum display pixel pitch: 85 pixels/inch (0.3 mm/pixel)
v. Minimum display area 700 cm2
vi. Antiglare screen surface that shows no distinct virtual image of a light source
vii. Minimum uniform diffuse ambient contrast ratio for 500 lx luminance: 10:1

Discussion:

As stated in the standard, the high level requirement for visual display characteristics is meant to "minimize perceptual difficulties for the voter". One way to improve the readability of a display is to make the display larger, thus making the same content larger. This was the intent of 3.2.5.a.v and is consistent with comments made in RFI 2015-04 that say that "larger screens make the visual display easier to read and navigate." However, this idea appears to be in conflict with 3.2.5.a.iv in that the display pixel pitch requires a higher resolution screen when the display size is increased. An example would be a scenario in which content that meets all usability and accessibility requirements on a 24 inch 1080p resolution screen could not meet the standard if displayed on a 1080p 32 inch screen, even though the content is larger. To provide the pixel density required by the standard for the larger displays now available, the resolution of the screens at the various display sizes requires the use of products that are either not expected to be available on the market for the desired lifetime of a voting system or are prohibitively expensive.

Conclusion:

Similar to the guidance that was given for display size, larger screens that can be shown to provide acceptable usability and accessibility will not be strictly held to the 85 pixels/inch requirement **if** the product has undergone thorough usability testing and the submitted usability test reports demonstrate good usability and accessibility performance (in particular, works for low literacy, low vision, and dexterity). In these cases, EAC will have the reports evaluated by usability/human factors experts to confirm the findings in the manufacturer submitted usability test report(s).

Effective Date:

Effective immediately for all new test campaigns.