

- (1) The wireless phone features and functions in the current marketplace that are not accessible for people who are blind, have vision loss, or are deaf-blind and the extent to which gaps in accessibility are preventing wireless communication access by these populations;

COMMENT: recently, Verizon (my wireless carrier) started offering the Samsung Haven, a phone costing just \$40 (with contract). It is not a smartphone, yet it offers accessible texting, recent calls, caller ID, contact management, calendar, alarm clock, and other features that sighted cell phone users take for granted. With the exception of expensive smartphones paired with even more expensive software, and excepting of course the iPhone, I have never seen a cell phone so accessible. The Haven, however, is the only phone like it to my knowledge: every other phone (which is not a smartphone) makes either no attempt to be accessible, or offers a useless “menu readout” feature, where menus are spoken aloud but nothing after that. For example, I could hear the menu options as I move over them to get to my contacts, but once I open the contacts, speech stops and I am once again lost. I get the feeling that this is just a nod toward accessibility to keep the manufacturer barely within regulations and is not meant to be a serious feature useable by anyone. Basically, nearly every cell phone on the market is inaccessible, which is to say, a blind user can take or place phone calls (usually by remembering phone numbers or relying on someone else to program a speed dial or voice dial profile into the phone for a given contact), but that is all. No independent use of the phone’s other features, no texting, not even a way to see who is calling before the user answers. Of course, the main exception is Apple’s iPhone, but that is only available on one carrier. Some (very expensive) smartphones are accessible after the user pays as much for special software as they did for the phone, but as far as affordable phones go, the Haven is the only accessible one of which I am aware.

- (2) The cost and feasibility of technical solutions to achieve wireless accessibility for these populations;

COMMENT: I am not an expert by any means. However, if Samsung can do it in the Haven, I fail to understand where the problem lies. Phones print text to their screens, so it is nothing, especially nowadays, to just speak the text through a synthesizer while writing it to the screen. A few soft keys, configurable by the user, would be nice to have so that the user could control the speech (such as reading a text message character by character or having letters spoken back phonetically). Overall, though, if a company truly wanted to adapt a phone to be fully accessible, I feel they could do it, and for not as much money as they may think it would take.

- (3) Reasons why there are not a greater number of wireless phones – particularly among less expensive or moderately-priced handset models – that are accessible to people who are blind or have vision loss;

COMMENT: this is an excellent question, and one that I, among many blind people, have been asking for years. The technology is there, the knowledge is there, the beta testers are there, yet companies refuse. Personally, and I again say that I am no expert in any of this, I think it is the cost. How many accessible phones would be bought (or rather, how many users would employ the accessibility built into a given phone) compared to the total number of users of a given phone? The ratio would be relatively low, and so companies cannot see spending the time and money to build something that so few people (relatively speaking, of course) would use. Again, the notable exception to this is Apple, who put a screen reader into their phone, a screen reader which offers the blind the chance to use a touch screen like never before, and an accessible iPhone costs no extra since accessibility is standard, not a package you have to pay for after buying the phone itself. Samsung has also taken this

approach with the Haven, a low-cost phone which is remarkably accessible, especially for being Samsung's first attempt at an accessible phone (to my knowledge at least). The Haven, too, comes ready to be used by the blind, not ready to have its accessibility added on after a several hundred dollar extra package is purchased. Clearly it is possible for a company to create an accessible product, and yet most never bother. As I said, I think it comes back to low return on the companies' investment.

- (4) Technical obstacles, if any, to making wireless technologies compatible with Braille displays, as well as the cost and feasibility of technical solutions to achieve other forms of compatibility with wireless products and services for people who are deaf-blind;

COMMENT: there is already an open standard to which a growing number of Braille display manufacturers conform (see <http://www.openbraille.org>), and nearly every modern Braille display uses Bluetooth (which happens to be in nearly every cell phone so that wireless earpieces can be used). In theory, it is therefore not much of a leap to supporting wireless displays. Another possibility for this sort of thing is a technology such as E-Sense, which is able to "project" tactile sensations onto a flat surface. I suspect that such sensations could be made to resemble Braille. Therefore, a phone manufacturer could offer a phone with its front covered in this material, and you have an instant, and relatively cheap (pricing is not yet available on E-Sense, so I am surmising here) Braille display. While this would be of tremendous value to the deaf-blind, even the non-deaf blind user would benefit greatly from such a setup. How often do you use your phone in a noisy environment, such as on the street, in a crowded bus or subway stop, and so on? A blind user has a hard time in such environments since ambient noise makes it very difficult, if not impossible, to hear the all-important synthetic speech coming from the phone. Therefore, a Braille display is vital in such areas, and many users run into this all the time if they live in a large city. Currently, the only way for any blind user to use a phone with a display is to carry the phone and a very expensive display together (a 12-cell display costs about \$2,000). With some sort of built-in display, any blind user could use their phone in all situations (an important, and often overlooked, part of accessibility), whether deafened permanently or only temporarily. To the blind, any hearing loss, imposed or internal, is cause to break out the Braille, since all we have are those two options – speech or Braille.

- (5) Recommendations on the most effective and efficient technical and policy solutions for addressing the needs of consumers with vision disabilities, including those who are deaf-blind.

COMMENT: stipulate in your policies that manufacturers must make cell phones and other communications devices accessible, and define exactly what that means. To me, it means having FULL access to ALL phone functions (unless the manufacturer has no control over a feature's accessibility). This does not mean that a phone can speak its menus and then stop speaking when the user tries to use one of the options prompted by speech, and it does not mean that including a voice command system where a user can tell the phone what to do is good enough. After all, what good is the ability to issue commands if you cannot tell what the command does? Penalties for failing to meet these requirements should be enforced, and companies should be regularly checked to see that all their products meet these guidelines.

- (6) Recommendations on actions that our bureaus or the Commission should take to address the current lack of access. For example, is additional guidance needed on specific access features that should be included in wireless products? Should we

facilitate a dialogue among stakeholders in order to reach a specific agreement to address the accessibility concerns outlined above?

COMMENT: dialog between yourselves and cell phone manufacturers would be a huge help. Companies need to understand exactly what it means to have an accessible device, why accessibility is so important, especially to those blinded later in life, what does NOT constitute accessibility, and that penalties for failing to offer accessible products do exist and will be enforced if necessary. Offer examples of the possibilities, such as the iPhone or the Haven. As to specific features, I think two are vital for the blind and deaf-blind: controllable speech (volume and rate are adjustable), and support for Bluetooth Braille displays (if the phone already includes Bluetooth). It is important to note that companies should not be allowed to partner with one Braille display manufacturer, but should instead embrace the Open Braille Initiative. Braille displays are already extraordinarily expensive, and forcing a user to buy a new \$2,000 display so he can use his new \$40 phone is worse than charging \$400 for a phone screen reader (as is currently the practice for any smartphone that can be made accessible).