



Rehabilitation Engineering Research Center for  
Wireless Technologies

**VIA ECFS**

December 7, 2010

Marlene H. Dortch, Secretary  
Office of the Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
TW-A325  
Washington D.C. 20554

Re: **CONSUMER & GOVERNMENTAL AFFAIRS BUREAU AND WIRELESS  
TELECOMMUNICATIONS BUREAU SEEK COMMENT ON  
ADVANCED COMMUNICATION PROVISIONS OF THE TWENTY-  
FIRST CENTURY COMMUNICATIONS AND VIDEO ACCESSIBILITY  
ACT OF 2010 [CG Docket No. 10-213]**

Dear Ms. Dortch:

Enclosed for filing in the above referenced Public Notice are reply comments of the Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC).

Should you have any questions concerning this filing, please do not hesitate to contact via email either Dr. Helena Mitchell at [helena.mitchell@cacp.gatech.edu](mailto:helena.mitchell@cacp.gatech.edu) or Frank Lucia at [felucia@att.net](mailto:felucia@att.net).

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "H. Mitchell".

Helena Mitchell, Ph.D.  
Executive Director  
Center for Advanced Communications Policy  
& Principal Investigator, Wireless RERC  
Georgia Institute of Technology

Enclosure

**Before  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
<b>Advanced Communications Provisions</b>	)	
<b>Of the Twenty First Century Advanced</b>	)	
<b>Communications &amp; Video Accessibility</b>	)	
<b>Act of 2010</b>	)	<b>CG Docket No. 10-145</b>

**Reply Comments of  
Rehabilitation Engineering Research Center For  
Wireless Technologies (Wireless RERC)**

The Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC), hereby submits reply comments in the above-referenced Public Notice released on October 21, 2010 with reply comments due on December 7, 2010.

The Wireless RERC<sup>1</sup> is a research center focused on promoting equitable access and use of wireless technologies by people with disabilities and on encouraging the application of Universal Design practices in future generations of wireless technologies. As such, we are pleased that the FCC is seeking comments on proposed new Sections of the “Accessibility Act” of 2010 to provide people with disabilities access to equipment, networks and advanced communications services. The Wireless RERC through its

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<sup>1</sup> The Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC) is sponsored by the National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S. Department of Education under grant number H133E060061. The opinions contained in this filing are those of the authors and do not necessarily reflect those of the U.S. Department of Education or NIDRR.

research and development activities works with people who have disabilities, accessing wireless products and services and gathering their input as to specific accessibility attributes and challenges. This is an ongoing effort conducted through the Wireless RERC Survey of User Needs (SUN) of its Consumer Advisory Network (CAN) which is comprised of more than 1700 persons with disabilities. The survey is updated annually and provides insights into the accessibility of wireless devices, services and applications. The Wireless RERC commends the FCC in its sustained efforts to garner diverse perspectives and input in the development of the content of rulemakings concerning the creation and perpetuation of an accessible technology environment. While the Wireless RERC did not participate in the comment period we would like to contribute reply comments for consideration as the FCC develops its Notice of Proposed Rulemaking as required by the Twenty-First Century Communications and Video Accessibility Act of 2010.

### *II.1. Advanced Communications Services (ACS)*

Any definitions for ACS should be mutually exclusive to avoid ambiguity and to clearly describe the service so that both the manufacturers, service providers and people with disabilities know exactly what products and services are covered by the rules. The Center for Advanced Communications Policy (CACP) collaborates with key stakeholders including industry leaders, leading research centers, legislative and regulatory bodies, and nonprofits to address a wide range of advanced communications policy issues and related technology applications, particularly in the wireless and new technology arenas. CACP is fully aware of the rapidly expanding dearth of ACS making it into the marketplace.

Our work with the Wireless RERC emphasizes that the ACS industry be cognizant of the needs of people with disabilities as new technology is developed.

In comments filed by **CTIA-The Wireless Association** they suggest that “definitions made by the Commission should clearly and unambiguously identify the services that must be made accessible” (page 4). We agree this would help with compliance and also “ensure that all parties can devote appropriate resources to meeting their respective obligation under the Act to make these services accessible.” In comments filed by **Gregg C. Vanderheiden, PhD** of the Trace R&D Center, under the ACS section, he points out that phrasing is equally important as the definitions. We concur. The phrase “Voice over IP services” encompasses both interconnected and non-interconnected services regardless of how the services are marketed to the consumer. The Wireless RERC also concurs with Dr. Vanderheiden’s statement concerning interoperable video conferencing service, specifically “Interoperable point-to-point video communications is also important to ensure that communications during an emergency is possible with maximum compatibility and probability of a successful connection to both emergency services and with other people that a person may need to contact to ensure their safety or that of their loved one” (page 3).

**AT&T, Inc.** notes the fact that Section 716 and Section 255 are mutually exclusive which in our estimation could cause confusion if the intended audience is not aware of the distinctions between Section 716 and Section 255 since they appear in separate “Acts.” Thus is it important to clarify the discrete characteristics of covered ACS to all pertinent stakeholders. **T-Mobile** says “Section 716 should complement and not duplicate Section 255...However for emerging types of advanced communications

devices and services for which there is no established framework of compliance with Section 255, the new Section 716 requirements should apply” (page 9). While there are nuances that the FCC will have to determine regarding obligations going forward with Section 716 ACS and Section 255 compliance to existing language, we are more concerned with ensuring that there is no technology that ends up falling outside the scope and intent of Section 716 to ensure people with disabilities have access to ACS; and that all accessibility options are exhausted before a manufacturer decides that accessibility is not achievable. In today’s marketplace there are many ways to achieve accessibility, including embracing universal design elements throughout all manufacturing stages. The use of universal design in products will become more important as the U.S. population continues to age into disability as the baby boomers retire and face accessibility issues. We therefore believe AT&T provides some guidance that might help in the event that built-in accessibility is deemed unachievable: “If Section 716 accessibility is not achievable, a manufacturer or provider must still ensure that the equipment or service it offers remains compatible with existing peripheral equipment or specialized customer premises equipment commonly used by persons with disabilities to achieve access, including mass market devices that might also be used by persons without a disability” (page 3).

## *II. 2. Achievable*

Advanced communications technologies continue to grow at an accelerated rate. As pointed out by several entities that filed, Section 716’s “achievable” definition is an improvement over Section 255’s lower standard of “readily achievable” (Vanderheiden,

page 3). We agree that “Accessibility is easier and less expensive to incorporate in the development of new technology” (Vanderheiden, page 2). This is an important consideration as many people with disabilities are early adopters of wireless technologies and next generation devices as indicated by the Wireless RERC’s Survey of User Needs. “Reasonable effort and expense” is important to end users with disabilities even more than to manufacturers and providers who have the ability to spread their research and development expenses over a wider marketplace. Accessible equipment is easier for all users when universal design elements are incorporated. As newer technology is created, how well the device is crafted to incorporate varying degrees of functionality and features can determine the optimal, or sub-optimal (as the case may be), level of accessibility. The marketplace is made up of a wide range of consumers, some who can afford more features on their devices than others; populations often at a disadvantage in affording expensive devices are vulnerable populations and people with disabilities. We strongly encourage that all manufacturers, especially those who produce wireless devices, take seriously the obligation to provide people with disabilities access to emerging technologies as stated in the “Accessibility Act.” **CTIA-The Wireless Association** has worked with the disability community and others to address many concerns of accessibility in wireless devices, at a minimum, we support their statement that “people with disabilities have access to a broad range of choices at different price points, while allowing providers or manufacturers to offer accessible products and services to meet a range of needs for people with disabilities” (page 9). However, the Wireless RERC believes that more can be done to ensure greater parity and functional equivalent access for the same services and products. Building in accessibility features will preclude the

need for people with disabilities to purchase additional software to make the device accessible.

### *III.3. Other Matters*

Dr. Vanderheiden addresses the rule of construction for manufacturers, asserting that “It would make the Act largely ineffective for people with multiple disabilities (such as many people who are aging (with, e.g., low vision and arthritis) to permit development of one phone that is accessible to people with vision impairments and another phone that is accessible to people with dexterity impairments. If achievable, both options should be available in each device.<sup>2</sup>” The Wireless RERC supports this contention and further recommends that the FCC encourage that manufacturers adopt universal design principles and methods in the design and development of devices and device software. Ron Mace, architect and designer defines universal design as “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.<sup>3</sup>” This would benefit the end-user, as well as the wireless industry. By addressing the unmet needs of non-adopters, industry can win over a new market as people with disabilities who choose *not* to adopt wireless technologies often do so as a result of poor product design and lack of accessibility.<sup>4</sup> Furthermore, universally designed products are more usable by all people regardless of ability. The

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<sup>2</sup> Vanderheiden, Gregg C. (2010). Comments filed *In the Matter of Advanced Communications Provisions of the Twenty First Century Communications and Video accessibility Act* [10-213]. November 22, 2010, Washington, D.C.

<sup>3</sup> The Center for Universal Design (1997). *The Principles of Universal Design*, Version 2.0. Raleigh, NC: North Carolina State University.

<sup>4</sup> Smith-Jackson TL, Nussbaum MA, Mooney AM. Accessible Cell Phone Design: Development and Application of a Needs Analysis Framework. *Disability and Rehabilitation*. 2003; 25:549-560.

general public utilizes captions, voice input/output, tactile cues, etc., to better navigate varied environments. Universal Design is good for business and good for everyone.

AT&T, Inc. in consultation with the Wireless RERC and other groups, developed a Universal Design methodology for developers.<sup>5</sup> It is available at <http://developer.att.com/universaldesign>. The Wireless RERC recommends that all technology manufacturers integrate UD into their development strategy.

## VII. 7. Accessibility of Information Content

### **Reply to Comments filed by Communication Service for the Deaf, Inc. (CSD)**

CSD made clear in their comments their concern about the gap in access to emergency information by people who are Deaf or hard of hearing, and suggests the FCC utilize their role in implementation of the new legislation to address the accessibility of emergency information: “Emergency situations and disasters in the recent few years have exposed serious flaws in the emergency preparedness system, both on the national and state levels, and particularly its weaknesses in reaching people who are deaf or hard of hearing. While changes have been implemented to improve the system and its responsiveness, a cohesive and mainstreamed system that effectively alerts deaf and hard of hearing people in cases of emergency has not been developed. CSD wishes to take this opportunity to encourage the FCC, in conjunction with other federal and state agencies responsible for emergency preparedness, as well as private manufacturers, to take the steps now as technology advances continue to be made to look ahead for the possibility

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<sup>5</sup> AT&T. (2008). AT&T Unveils Universal design Approach to Help Developers Meet the Wireless Needs of Customers with Disabilities. March 13, 2008. Available at <http://www.att.com/gen/public-affairs?pid=12964&goback=group01&article=disability>

of creating standards for emergency broadcasting and thereby increasing accessibility through new media platforms and devices.<sup>6</sup>” The Wireless RERC agrees that this is a unique opportunity to address emergency communications within the larger context of regulations for advanced communications, allowing for more expansive stakeholder input.

Between 2006 and 2009, the Wireless Emergency Communications (WEC) project of the Wireless RERC developed prototype technology to broadcast local and targeted delivery of alerts and warnings to wireless devices in accessible formats and conducted field tests with users with sensory disabilities. CSD makes a specific recommendation to “include a dedicated port for purposes of selectively triggering an alerting device such as a flasher<sup>7</sup>” in Internet enabled devices. WiRERC field test data supports this recommendation, revealing a need within the Deaf and hard of hearing community for emergency alerts received on mobile phones to interface with peripheral alerting devices like bed shakers or light flashers. The hearing impaired participants that were profoundly Deaf, or that used hearing aids or cochlear implants, stressed the need to receive alerts while asleep. Recommendations were made for future research to develop and field test interfacing a lamp, bed shaker, or wearable/portable device, with mobile devices capable of receiving emergency alerts.

People without sensory limitations can utilize multiple sensory cues to alert them to incoming calls or text messages whether carrying it on their body, in a bag, or while

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<sup>6</sup> Communication Service for the Deaf, Inc. (2010). Comments filed *In the Matter of Advanced Communications Provisions of the Twenty First Century Communications and Video accessibility Act* [10-213]. November 22, 2010, Washington, D.C.

<sup>7</sup> *Ibid.*

sleeping. They may hear it and/or feel the vibration or hear the vibration on a tabletop. If one of their senses does not pick up the signal another usually will. For those with significant hearing loss the other sense employed for recognition of incoming alerts would be sight. If Internet enabled devices (smartphones, laptops, televisions, etc.) include a requirement for the use of visual cues, as well as vibration and sound this would further ensure accessibility for most people with sensory limitations. No less than two of their senses would be engaged to notify them of incoming alerts, greatly increasing the likelihood of the timely receipt of such alerts.

In closing, the Wireless RERC wishes to emphasize the importance of accessibility across disability and across the industry. The forthcoming NPRM would benefit both people with disabilities and industry by proposing or requiring the integration of universal design methodology as common design and development practice for ACS in the future. This will elevate the usability of the end products and benefit all stakeholders.

Respectfully submitted,



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Dated this 7<sup>th</sup> day of December 2010