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JUN 30 1998

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

ORIGINAL

June 30, 1998

Via HAND DELIVERY

Ms. Magalie R. Salas  
Secretary  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, D.C. 20554

RE: **The Matter of Implementation of Section 255 of the  
Telecommunications Act of 1996, Access to Telecommunications  
Services, Telecommunications Equipment, and Customer Premises  
Equipment by Persons with Disabilities, W.T. Docket No. 96-198.**

Dear Ms. Salas:

Enclosed please find for filing on behalf of Motorola, Inc., an original and nine copies of Motorola's Comments in the above-referenced proceeding.

Also enclosed is an additional copy of the Comments, which we ask you to date stamp and return with our messenger.

Respectfully submitted,



Steven K. Davidson

Enclosures

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**Before The**  
**FEDERAL COMMUNICATIONS COMMISSION**  
**Washington, D.C.**

In the Matter of )  
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Implementation of Section 255 of the )  
Telecommunications Act of 1996 )  
 )  
Access to Telecommunications Services, )  
Telecommunications Equipment, and )  
Customer Premises Equipment )  
By Persons with Disabilities )

WT Docket No. 96-198

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JUN 30 1998

FEDERAL COMMUNICATIONS COMMISSION  
DEPT. OF THE SECRETARY

**COMMENTS OF MOTOROLA, INC.**

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Dated: June 30, 1998

## EXECUTIVE SUMMARY

“Motorola is committed to providing quality products and services to all of our customers – including our customers with disabilities. We want to take a leadership role in the creative development of new products which will meet the needs of people with disabilities, and at the same time make our products easier to use by everyone.”<sup>1</sup> Motorola is committed to creating a product for every person, one that fits the needs of the consumer and is the consumer’s product of choice in the marketplace. As a company, we are driven by the opportunity and challenge of meeting the needs of our customers in creative ways with quality products and services.

In implementing Section 255, the Federal Communications Commission (“FCC”) should focus on the overarching goal of Congress: to increase the number of Americans with disabilities who can use telecommunications and to improve the ease of access for those persons. Accessible customer premises equipment (“CPE”) is a means for achieving this goal, not the end in itself. In order to achieve this overarching goal, the FCC should adopt a regime that aims to provide a product for every person, not every product for every person. This will result in better products for all consumers – persons with and without disabilities.

The FCC should capitalize upon and encourage the current trend towards product differentiation in CPE manufacturing as the best way to ensure that CPE provides effective and efficient access to telecommunications for persons with a variety of functional limitations. At pages 11 to 15 of these comments, Motorola discusses specific examples of how inclusion of access features across a product line (pagers) results in CPE products that provide meaningful –

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<sup>1</sup> Robert Growney, Chief Operating Officer of Motorola.

rather than superficial levels of access – to telecommunications for persons with different functional limitations, and how the FCC’s proposed rules could stifle the development of new products that increase accessibility.

The FCC proposes to define “accessible” CPE as “universally accessible” to everyone, and to apply that standard to every individual CPE product. Such an approach hinders, rather than promotes, the product differentiation that is essential to achieving the goals of Section 255. It posits universal or “full” accessibility as the “ideal” and requires manufacturers to justify for each and every product (in defending against a series of complaints that may allege inaccessibility due to a variety of different functional limitations) what cannot be done: “universal accessibility.”

The extraordinary burden of complying with the FCC’s proposal and the waste of resources that must be dedicated to reaching this foregone conclusion might be justified if universally accessible CPE were an “ideal” consistent with Section 255’s overarching goal of access to telecommunications. It is not. We believe that is an inappropriate reading of the law that will hinder, rather than encourage, the market introduction of the full range of accessible product that would meet the needs of customers. As Motorola’s examples in this submission demonstrate, “universal accessibility” is far less than an “ideal” strategy for achieving the goal of Section 255 and for providing CPE that consumers – persons with and without disabilities – actually want. The nature of the access problem (different functional limitations can generate conflicting access needs), the realities of product design, and the legal limitation (what is “readily achievable”) on manufacturers’ obligation to provide a remedy, all compel the conclusion that product differentiation, encouraged through a product-line rule for compliance, is the best strategy for increasing access to telecommunications.

Similarly, as currently drafted, the FCC's accessibility criteria require manufacturers to evaluate the accessibility of product inputs and outputs to a particular functional limitation independently, which can potentially generate unintended, nonproductive requirements, for example, to make product controls accessible to a person who is blind because it is "readily achievable," even though it is not "readily achievable" to make the outputs on the same product accessible to persons who are blind. These examples demonstrate that the FCC's proposal ignores the goal of providing meaningful access to telecommunications services for people with a range of functional limitations.

Motorola agrees with the FCC that the definition of "readily achievable," which defines the scope of manufacturers' obligations under Section 255, should be adapted to the telecommunications context. In order to formulate regulations that are appropriate to the process that the FCC intends to regulate – manufacturing – the FCC would benefit from a greater appreciation and understanding of the many inter-related factors and difficult trade-offs that drive CPE product design and development. To that end, Motorola has developed a matrix for a typical product, discussed at pages 27 to 32, which identifies the impact of typical access strategies that could satisfy the FCC's proposed 18 point accessibility "checklist" upon the "product drivers" (such as cost, memory, size, battery (power drain) and features) that drive the product development process, intended to satisfy the needs of a particular market segment. "Budgets" are set for each of the "product drivers" to ensure that the product goals are met. These budgets inter-relate in complicated ways. For example, many features require memory and power, which in turn have an impact on cost and size. The matrix demonstrates that in virtually every instance, inclusion of an access feature would implicate not just one, but many product drivers.

Consequently, the matrix establishes two points. First, the extraordinary burden of compliance that will be imposed upon manufacturers if the FCC adheres to its proposal to require manufacturers to assess what is “readily achievable” for each of the 18 items on the accessibility “checklist” for each and every product. Second, the complexities that must be taken into account when making a determination of what is “readily achievable” – not just whether including a particular access feature would fundamentally alter a product, for example, but also whether any or all of the other product modifications that would be required to accommodate that access feature would result in a fundamental alteration.

With respect to the specific factors that define what is “readily achievable,” Motorola proposes three factors that are derived from the considerations suggested by the FCC. First, as the FCC has proposed, **technical feasibility** should be expressly recognized as a factor. Second, in keeping with its recognition that every product cannot accommodate every disability at the same time, the FCC should modify its proposal to take into account the **cumulative impact** of removing barriers to telecommunications through inclusion of access features, which would be consistent with the approach taken by the Department of Justice (“DOJ”) in the context of the Americans with Disabilities Act (“ADA”). Third, the FCC should recognize, as DOJ did in the ADA context, that the “readily achievable” standard does not require **fundamental alteration** of CPE products so that they are less desirable (in terms of form, functionality and cost) for the target market that they were designed to serve.

As the FCC recognizes, the nature of the accessibility problem, the realities of the product design, and the limitations of the “readily achievable” standard dictate that manufacturers developing CPE products in a highly competitive market can provide greater accessibility if they have discretion in incorporating access features across lines of similar,

comparably priced products. Rather than hold manufacturers to an impossible standard of “universal accessibility” that will not result in meaningful access solutions for persons with disabilities, the FCC should adopt a product-line approach to compliance as the rule, rather than the exception.

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**Before The  
FEDERAL COMMUNICATIONS COMMISSION**

**Washington, D.C.**

In the Matter of	)	
	)	
Implementation of Section 255 of the Telecommunications Act of 1996	)	
	)	
Access to Telecommunications Services, Telecommunications Equipment, and Customer Premises Equipment By Persons with Disabilities	)	WT Docket No. 96-198

**COMMENTS OF MOTOROLA, INC.**

**I. INTRODUCTION**

Motorola is committed to providing quality products and services to all of our customers – including our customers with disabilities. We want to take a leadership role in the creative development of new products which will meet the needs of people with disabilities, and at the same time make our products easier to use by everyone.

Robert Growney  
Chief Operating Officer

Motorola opens its comments in this proceeding with a statement of our commitment to provide products and services to all our customers because we believe it is important for the FCC, the Congress, service providers and the public who use our products to know that we embrace the spirit and intent of Section 255.

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<sup>2</sup> This statement introduces a training video presently in production for Motorola employees which will address how Motorola can better serve the needs of people first, specifically people who have disabilities or functional limitations.

*Total Customer Satisfaction* is Motorola's fundamental objective. Guided by fundamental principals of respect for the individual and uncompromising integrity, the strategies we employ to achieve this objective define Motorola. Over the years, Motorola has initiated a number of critical key initiatives, including Six Sigma Quality for our products, Total Cycle Time Reduction, and forty hours of training for every Motorola associate, every year. These initiatives, strategies really, focus Motorola on the basics of customer satisfaction, in an environment of constant change in products, services and technologies. Part of the challenge which our industry faces today is meeting the needs of more consumers who have an increased desire for product choices, more access to telecommunications services and greater ease of use.

To meet the needs of persons with disabilities, Motorola established the Motorola Telecommunications Access Council ("MTAC") in late 1996. MTAC is comprised of representatives of the Motorola businesses which have products and services for which greater access and usability is desired. It includes all of the businesses which we believe are impacted by Section 255 of the Act, and the customer services operations as well as corporate functions which have synergistic expertise, such as research, training, human resources, quality and product safety. Working together, we have identified internal and external strategies to increase accessibility and usability of Motorola products and services.

In cooperation with consumers who have disabilities and who assisted in course development, Motorola University has developed an introductory training course (with additional courses to follow) for Motorola employees. The purpose of the course is to help associates better understand and meet the needs of customers with functional limitations and to develop an understanding of how easier to use products are good for all consumers. Motorola

expects associates in engineering, marketing, customer service, research and many other classifications to take this training in the next year.

Motorola also has increased the involvement of customers with disabilities in product trials and research as an important strategy for understanding how our products can be made more usable. In the last year Motorola introduced its narrowband PCS product, the *Portable Answering Machine* ("talking pager"). Working with a carrier, Motorola provided a group of 15 consumers who are blind or have visual impairments with the *Portable Answering Machine* for three months. During the trial, the consumers kept notes to suggest product features that could be made more usable in the next generation of the product. In addition, at the American Council of the Blind and the American Foundation for the Blind Leadership Institute in Washington, DC this spring, Motorola and ConXus (the service provider for this product in the Washington area) provided *Pocketalk*<sup>™</sup> talking pagers to anyone attending the conference for the duration of the conference. Instructions were available in Braille, large print or audio cassette, as well as via an 1+800 number and on-site assistance. After the Leadership Institute, we conducted phone interviews with users. The valuable feedback received from participants will help us in making our next generation of products easier to use.

In the area of customer service, Motorola provides cellular and PCS user manuals upon request in Braille, large print or audio cassette. *Portable Answering Machine* (*Pocketalk*<sup>™</sup> or *VoiceNow*<sup>™</sup>) manuals are also available in alternative format for persons with visual impairments. All of Motorola's over 50 call centers in the US will be equipped, and call center associates trained, in the use of TTYs by the beginning of the third quarter of 1998. The TTYs will have dedicated telephone lines.

Motorola has also committed to research initiatives for people with functional limitations. Motorola now provides a Hearing Aid Compatible analog cellular telephone and is beta testing a digital PCS product for use with hearing aids in the acoustic mode. The digital PCS products utilize a battery with a built-in antenna, designed with the user of a hearing aid in mind. The "antenna battery" design minimizes interface to the hearing aid, and fits any of Motorola flip phones as well as other models. In addition, we have a human factors research effort underway in cooperation with several organizations which advocate for and serve persons with disabilities. Motorola human factors scientists recently attended the Self Help for Hard of Hearing convention and will attend the National Association of the Deaf and American Council of the Blind conventions to gather data from members on how Motorola products are used today and could be made more usable in the future.

Motorola is committed to creating a product for every person, one that fits the needs of the consumer and is the consumer's product of choice in the marketplace. This is a team effort involving Motorola, service providers and consumers. The initiative is complex and comprehensive. As a company, we are driven by the opportunity and challenge of meeting the needs of our customers in creative ways with quality products and services.

Motorola's comments on select issues raised by this NPRM reflect an underlying theme: Results-oriented incentives, combined with the freedom to attain such results, drive competitive innovation in the telecommunications market, thereby increasing access to telecommunications products and services for persons with disabilities.<sup>3</sup> Detailed product-by-

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<sup>3</sup> In addition to these comments, Motorola endorses the comments submitted by the Telecommunications Industry Association ("TIA") in response to this NPRM.

product process regulation, rather than overall goal regulation, will discourage the innovation needed to achieve Congress' overarching goal of increasing the number of Americans with disabilities who can access telecommunications and the ease of access for those persons.

Motorola's comments fall into four broad categories.

Section II of these comments addresses the issue that is of paramount importance to Motorola and other manufacturers: the need for the FCC to apply Section 255 accessibility requirements across lines or families of products, rather than to each individual piece of telecommunications equipment.<sup>4</sup> The FCC's NPRM is unclear on this key point. The FCC proposes that accessibility must be considered for each product, but that manufacturers can rely upon a product family based approach to compliance if the approach results in an overall increase in accessibility.<sup>5</sup> Section II of these comments demonstrates that only product differentiation will ultimately promote meaningful access for a range of disabilities, differentiation that is inconsistent with the individual product-by-product paradigm tentatively proposed by the FCC.

Section III endorses the FCC's general proposal to adapt the definition of "readily achievable," which defines the scope of manufacturers' obligations under Section 255, to the telecommunications context. With respect to the specific factors that should be considered in determining what is "readily achievable," Motorola suggests some modification to the FCC's proposal based upon ADA precedent.

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<sup>4</sup> For the purpose of these comments, Motorola refers to telecommunications equipment and CPE interchangeably to refer to equipment that is subject to Section 255, unless otherwise indicated.

<sup>5</sup> See NPRM at ¶¶ 169-170.

Section IV offers alternate definitions of key statutory terms, including “accessible” and “compatible,” which will promote increased access for persons with disabilities.

Section V advocates a fair and efficient complaint process. Specifically, Motorola advocates a standing requirement for filing a complaint, as well as measures to insure the confidentiality of proprietary information submitted by manufacturers in the complaint process.

**II. A PRODUCT-LINE APPROACH TO COMPLIANCE SHOULD BE THE RULE, NOT THE EXCEPTION, BECAUSE IT WILL RESULT IN MORE MEANINGFUL ACCESS SOLUTIONS FOR PERSONS WITH DISABILITIES.**

From Motorola’s perspective, the most important decision that the FCC will make in response to this NPRM is whether Section 255 applies to each piece of telecommunications equipment, or to lines or families of products with similar features, functions, and price. Unfortunately, the FCC’s proposed rules do not take into account, “up front,” the need for manufacturers to exercise discretion in incorporating access features across products in a product line.

**A. The FCC’s Proposal To Require A Product-By-Product Assessment Of Whether It Is “Readily Achievable” To Provide Access Is Inconsistent With The Practical Reality That No Single Piece Of CPE Can Be Accessible To Everyone.**

As the FCC recognizes, “the **ideal of full accessibility** is generally limited by feasibility, expense, or practicality.”<sup>6</sup> in other words, by what is “readily achievable.”<sup>7</sup> The

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<sup>6</sup> NPRM ¶ 170 (emphasis added).

<sup>7</sup> Feasibility, expense, and practicality are the three components of the “readily achievable” definition proposed by the FCC. NPRM ¶ 100.

“ideal” that the FCC apparently has in mind is a piece of CPE that is accessible to all persons with all disabilities – in other words – a universally accessible product. In fact, the FCC’s proposed definition of “accessibility,” which would require that product inputs, outputs, displays, mechanical and control functions be usable by persons with a wide range of functional limitations or combinations of functional limitations,<sup>8</sup> is consistent with the model of a universally accessible product.<sup>9</sup> While the model of a universally accessible product may be appealing in the abstract, this “ideal” does not provide meaningful guidance as to how Section 255 should be implemented and applied to the realities of manufacturing or of purchasing CPE in a manner useful to consumers with disabilities. In practice, adoption of a regime in which manufacturers are required to make every product accessible to every person, or demonstrate why it is not “readily achievable” to do so, requires manufacturers to defend their inability to

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<sup>8</sup> Architectural and Transportation Barriers Compliance Board (“Access Board”) Guidelines §§ 1193.41, 1193.43. These functional limitations relate to speech, vision, hearing, movement and processing of information.

The FCC has proposed to adopt the definition of “accessible” developed by the “Access Board.” NPRM ¶ 75. The Access Board’s definition of “accessible,” 36 C.F.R. § 1193.3, consists primarily of requirements related to the accessibility of product inputs and outputs to a variety of functional limitations. 36 C.F.R. § 1193.41 (establishing nine criteria for product input, control, and mechanical functions); § 1193.43 (establishing nine criteria for product output, display and control functions). In addition, the Access Board’s definition includes requirements related to “pass through” of codes and information “necessary to provide telecommunications in an accessible format,” 36 C.F.R. § 1193.37, and a prohibition against changes to products that would decrease “the net accessibility” of CPE, unless the product is discontinued. 36 C.F.R. § 1193.39. For convenience, Motorola refers to the elements of the definition of “accessible” as the “18 point checklist,” even though the definition in fact establishes more than 18 requirements to achieve accessibility.

<sup>9</sup> Under the proposed definition of accessibility, each of the eighteen items on the “checklist” is mandatory, so that a manufacturer must perform an independent “readily achievable” calculus for each item on the checklist. See NPRM ¶ 75 (requesting comment on this proposal).

achieve the impossible – a universally accessible product. Moreover, the regulatory scheme proposed by the FCC will in some cases lead to unintended, nonproductive results, demonstrating why a product-line approach to compliance is the only realistic way to implement Section 255.

Throughout the Section 255 implementation process, manufacturers, persons with disabilities, the Access Board, and the FCC have acknowledged that Section 255 does not require manufacturers to make universally accessible products. This recognition is based upon two principles.

First, manufacturers' ability to make a universally accessible product is limited by the nature of the accessibility problem itself. As the TAAC acknowledged, "no single interface design will accommodate all disabilities."<sup>10</sup> It is not possible now, and probably not ever, to manufacture a piece of CPE that is accessible to every person with a disability. Different functional limitations generate different, often conflicting accessibility needs,<sup>11</sup> and even within a single disability, access needs can vary widely.

Second, Section 255 does not obligate manufacturers to make universally accessible products as a matter of law. As the FCC recognizes in the NPRM, universal access generally cannot be accomplished "without much difficulty or expense," and therefore, is neither "readily achievable" nor required by Section 255.<sup>12</sup> Universal accessibility is not "readily

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<sup>10</sup> NPRM ¶ 15 (citing TAAC Final Report § 5.2.1 at 20).

<sup>11</sup> For example, multiple selectable access features would likely run afoul of the requirement that the product be accessible to persons with cognitive disabilities. See Access Board's Guidelines 1193.41(i).

<sup>12</sup> NPRM ¶ 100; 42 U.S.C. § 12181(9) (definition of "readily achievable").

achievable” within the meaning of Section 255, because it is not technically feasible, would fundamentally alter the nature of the equipment, or is simply too expensive.

Because no single CPE product can be accessible to everyone, both the TAAC and the FCC have recognized that manufacturers will need to exercise discretion in incorporating access features that accommodate different functional limitations. As the TAAC recognized, “because no single interface design will accommodate all disabilities, companies **must use discretion in choosing** among accessibility features.”<sup>13</sup> Similarly, the FCC acknowledges that:

**In the marketplace, providers must decide what features to include and what features to omit. We believe it is reasonable for an informed product development decision to take into account the accessibility features of other functionally similar products the provider offers,** provided it can be demonstrated that such a “product line” analysis increases the overall accessibility of the provider’s offerings.<sup>14</sup>

Motorola commends the FCC for recognizing that, in at least some circumstances, a manufacturer should be permitted to take a “product-line” approach to compliance. Motorola believes, however, that the product-line approach should be the rule, rather than the exception. In marketplace terms, the FCC should embrace the policy of “a product for every person, not every product for every person.”

Instead of placing primary emphasis on a “similar product” defense, the FCC should recognize the legitimacy of a product-line approach to compliance “up front” in defining the scope of manufacturers’ obligations under Section 255. Rather than rely upon an uncertain

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<sup>13</sup> NPRM ¶ 15 (citing TAAC Final Report § 5.2.1 at 20) (emphasis added).

<sup>14</sup> NPRM ¶ 170 (emphasis added).

defense at the “back end,” manufacturers designing future products will likely rely on the more certain defense that it was not “readily achievable” to make an individual product accessible to some or all functional limitations.<sup>15</sup> Because it is impossible to make a universally accessible product, the “readily achievable” defense will have some merit with respect to every product. By allowing manufacturers to look across the range of their similar products as they do their design on the “front-end,” the FCC will permit flexibility and product differentiation that is critical if the goal of increased accessibility is to be achieved. The product-line approach reflects the limitations of the legal obligation imposed by Section 255 and practical realities. Moreover, use of the attainable product-line approach, rather than an unattainable ideal, will maximize the resources that are dedicated to accessible product design and development, as opposed to documentation and defending complaints.

**B. The FCC Should Adopt A Product-Line Approach To Compliance, Which Is Consistent With The Reality That No Product Can Be Accessible To Every Person – A Reality That Requires Manufacturers To Exercise Discretion In Incorporating Access Features Across Product Lines.**

**1. The FCC should implement Section 255 to promote product differentiation, which is the key to enhanced accessibility.**

If the FCC were to adopt an approach to Section 255 that required each manufacturer to provide a range of functionally similar, comparably priced products that are

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<sup>15</sup> A manufacturer might be deterred from adopting a product-line approach, for example, because of the potential disruption of its business that might result if the FCC were to determine that the manufacturer failed to provide the “overall increase in accessibility” required to justify product line compliance under the FCC’s approach. What would the FCC impose as a remedy? Would the manufacturer subsequently be required to demonstrate product-by-product compliance?

accessible, the FCC would create incentives for product differentiation, which is critical to increased accessibility for persons with disabilities.

The individual product-by-product paradigm proposed by the FCC as the presumptive method for complying with Section 255 fails to recognize that certain kinds of products and technologies are inherently better-suited to meeting the needs of people with certain functional limitations than other products and technologies. For this reason, it will often be a waste of resources to require a manufacturer to incorporate features that accommodate different functional limitations into a single product or to document why the manufacturer has determined that it is not "readily achievable" to do so. A few concrete examples taken from Motorola's product line demonstrate this point.

Motorola's *Portable Answering Machine* product is a pager with voice output that functions much like a mobile voice mailbox.<sup>16</sup> This product has been recognized as being helpful to persons who are blind or who have low vision because it permits them to receive pages and to review messages without any need to read text. Instead of appearing on a pager screen, the messages received are played audibly. In addition, the *Portable Answering Machine* product contains many audio cues and prompts that are quite useful to people with low or no vision.

Even though the addition of the *Portable Answering Machine* to the line of pagers substantially increased the usability of pagers to persons with one kind of disability, under the FCC's proposed product-by-product regulations, Motorola's incentives to create such a product could be reduced. Under a product-by-product or universal access approach, Motorola would

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<sup>16</sup> The *Portable Answering Machine* is currently marketed by Page Net under the name *VoiceNow*<sup>TM</sup> and by ConXus under the name *Pocketalk*<sup>TM</sup>. A product information sheet for the *Portable Answering Machine* is attached as Appendix A to these comments.

have been: (a) required, as part of its design process, to determine whether it was “readily achievable” to make the product accessible to the other functional limitations identified on the 18 point accessibility “checklist;” and (b) vulnerable to a complaints by persons with other disabilities alleging that the product is not accessible to them.

For example, a person who is completely deaf could file a complaint about the *Portable Answering Machine* product, even though a large number of other Motorola pagers, which typically include message display screens and vibrating alert functions, are ideal for a person who is deaf and wishes to receive text messages. In defending against such a complaint, Motorola might need to demonstrate why it was not “readily achievable” to make the *Portable Answering Machine* product usable to persons without hearing without reference to the access features included in these other pagers. Moreover, the issues that would likely be raised by a “readily achievable” defense for the *Portable Answering Machine* product would be complex. To make the *Portable Answering Machine* accessible to people who are deaf, while, at the same time retaining the features that make it accessible to people who are blind or visually-impaired, Motorola would, at a minimum, need to incorporate a voice to text software, a visual display, as well as visual or vibrating counterparts for all of the audio features of the product into the *Portable Answering Machine* product. These additions would have made the *Portable Answering Machine* too expensive and complex to build, and it might never have been produced, resulting in less access to paging technology for people who are blind.

Focusing only on the voice to text feature for a moment, and assuming for the sake of argument that this single accessibility feature had to be incorporated into the CPE

pager,<sup>17</sup> including this “accessible” function, would have the following ramifications on the product design:

- Addition of parts required to construct visual text display
- Increased size because of inclusion of text display
- Voice recognition software and/or hardware to convert voice to text software
- Additional chip capacity or memory to accommodate voice to text software
- Additional chip capacity or memory to generate visual display
- Increased size because of additional memory chips or greatly increased cost to incorporate similar size chip with increased memory capacity
- Greater power drain on the product, requiring a larger battery (resulting in an increase in size and creating the potential for greater interference),<sup>18</sup> a more expensive battery that has more power but is the same size, or a significant reduction in product use time

If Motorola were to incorporate the features required to provide access to a person who is deaf into the *Portable Answering Machine*, the end result would be a product that is bigger, more

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<sup>17</sup> As a threshold matter, the FCC would be faced by a difficult question of allocating responsibility for providing access to people who are deaf between the carrier and the manufacturer, because voice to text conversion can be accomplished either: (1) through a change in the infrastructure, accompanied by some changes to the pager; or (2) exclusively through far more extensive changes to each and every *Portable Answering Machine* on the market, which would have a serious impact on the product size, memory, and power drain.

<sup>18</sup> Under the proposed definition of “accessibility,” manufacturers must, to the extent “readily achievable,” avoid generating interference with hearing aids and other assistive listening devices. See Access Board Guidelines § 1193.43(h). The higher the power level and the higher the computing power that a product operates at, the more likely that it is to generate interference. As this example shows, by making the *Portable Answering Machine* accessible to a person who is deaf, Motorola might actually make it less useful to a person who is hearing-impaired, who might otherwise be able to use the product (for example at its maximum volume level) as it is currently marketed.

expensive, and has a shorter battery life – in short – is less desirable for all users, disabled and non-disabled alike.

Most importantly, the futility – for manufacturers, consumers and the FCC – of this inquiry into the accessibility of the *Portable Answering Machine* to just one of the many functional limitations identified on the 18 point “checklist.” becomes apparent when one recognizes the existence of other paging products that optimize visual features that are accessible to people who are deaf – alpha numeric pagers. An alpha-numeric pager would provide an equivalent function (deliver a message), be smaller in size, cost less, and should be preferable for deaf persons to use as a means of accessing paging technology.

Similarly, even though alpha-numeric pagers are extremely useful to persons who are deaf or hard of hearing, Motorola, under the FCC’s proposal, would: (a) be required, as part of its design process, to determine whether it was “readily achievable” to make the product accessible to the other functional limitations identified on the 18 point accessibility “checklist;” and (b) be vulnerable to complaints by persons with other disabilities alleging that the product is not accessible to them.

The same people who are blind or have low vision, and should find the *Portable Answering Machine* pager useful, for example, could complain that alpha-numeric products are not accessible to them. Motorola, as part of its design process, and subsequently the FCC, in the context of evaluating a complaint, would need to determine whether it was “readily achievable” to include a voice chip to convert text to voice into the alpha-numeric pager. Incorporating the text to voice feature would have the same consequences, in terms of increased size, greater cost, shorter battery life and product use time, as the *Portable Answering Machine* example described above. Moreover, inclusion of features to provide access to people who are blind or visually

impaired would fundamentally alter the nature of the product. Alpha-numeric pagers are designed to be worn on the belt or on the wrist (in a watch) in order to achieve “unconscious carry” by the user. If the text to voice feature were included on the alpha-numeric pager, resulting in increased product size, the alpha-numeric pager would not be able to achieve “unconscious carry” – which is a fundamental characteristic of what the alpha-numeric pager is and what the market that purchases the product – persons with and without disabilities alike – wants. In effect, both people who are blind and people who are deaf would get a product that is less usable, less attractive and more expensive than the products that are currently offered.

To summarize the above points, it is clear that sight impaired individuals can best receive information in voice, while hearing impaired people can most easily use text. At the present time, there are technologies that send voice messages well and **different** technologies that send text well. The most efficient way to get the right message format to the consumer is to use the right technology. Converting from text to voice or vice versa in the pager is inefficient and expensive, and makes no sense when there is such an easy way to accomplish the desired result using distinct products, each incorporating one type of technology.

**2. The FCC’s proposed regulations do not promote product differentiation, but instead can lead to unintended, nonproductive results.**

Other examples demonstrate that unintended, nonproductive requirements could be imposed upon manufacturers under an individual product-by-product approach. Under the definition of “accessibility” proposed by the FCC, a manufacturer would be required to assess whether it was “readily achievable” to accomplish each of the 18 items on the access “checklist”