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October 13, 1998

BY HAND

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Comments of Consumer Electronics Manufacturers Association in CS Docket No. 98-120

Dear Ms. Salas:

Enclosed for filing please find the original and nine (9) copies of the Comments of Consumer Electronics Manufacturers Association in the above-referenced docket.

Please stamp and return to this office with the courier the enclosed extra copy of this filing designated for that purpose. Please direct any questions that you may have to the undersigned.

Respectfully submitted,

David R. Siddall

Enclosures

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List ABCDE

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Carriage of the Transmissions	)	
of Digital Television Broadcast Stations	)	**CS Docket No. 98-120**
	)	
Amendments to Part 76	)	
of the Commission's Rules	)	
	)	

COMMENTS OF THE CONSUMERS ELECTRONICS MANUFACTURERS ASSOCIATION

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October 13, 1998

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

In November consumers in twenty two markets will welcome the first regularly-scheduled digital television (DTV) broadcasts. These first broadcasts signal the digital era for which the Commission and Congress have provided and for which the consumer electronics manufacturers, broadcasters, cable operators, motion picture industry, and computer companies have labored.

CEMA is the principal trade association representing the consumer electronics industry. CEMA's members participated throughout the Commission's digital television proceedings to bring this new digital broadcasting era to the American public, and have invested close to a billion dollars to design and build the new generation of digital television receivers. These receivers will work with the new digital broadcast signals and comply with all requirements of the broadcast standard adopted by the Commission. In addition, the receivers will function with any of the 18 formats additionally prescribed by the ATSC standard.

In 1997 when it adopted its digital broadcasting rules, the Commission did not address one element that is essential to the smooth and rapid transition desired by all parties : cable carriage of the new digital signals. Cable carriage of digital broadcasts is statutorily required and absolutely essential if the Commission's expressed desire for a smooth transition and rapid spectrum recovery is to be realized. The digital television receivers in stores this Fall work with the established digital standard.

The Commission should aggressively promote industry adoption of technical standards for cable-ready DTV receivers. Until such standards are implemented, cable operators should be

required to deliver to consumers an ATSC-compliant signal for digital receivers. This can readily be accomplished on both analog and digital cable systems. Once final cable standards are established, manufacturers will build cable-ready sets that will work with the cable digital standards as well as the broadcast digital standard.

Finally, cable operators must continue to be subject to the non-degradation requirement of the Communications Act. The broadcast digital signals contain a number of data elements, including channel mapping, V-chip rating information, closed captioning, and program guides, that relate to the programming and that must be passed through to the receiver in order for it to operate as designed and for consumers to have access to these functions.

CEMA and its members continue to work on related additional set-top connection standards with others, including cable and intellectual property interests. There are multiple options available today, however, that permits cable to deliver to its customers the digital programs intended for their reception. Using the available options to their fullest will promote the Commission's goals of a smooth and rapid transition.

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COMMENTS OF THE
CONSUMER ELECTRONICS MANUFACTURERS ASSOCIATION

I. INTRODUCTION

The Consumer Electronics Manufacturers Association ("CEMA") hereby submits comments in response to the Commission's Notice of Proposed Rule Making ("Notice") in the above-captioned proceeding.[1/]

The era of digital broadcasting will commence this Fall. Through its many actions and decisions, the Commission has remained sharply focused on the benefits to the American public of a successful transition from the analog technology of the 1940's to the digital technology of the future. The goals repeatedly articulated by the Commission continue to be worthy ones:

- to preserve free, over the air television in a digital world so that it will continue to be accessible to all Americans;

[1/] *Notice of Proposed Rule Making* in CS Docket No. 98-120, 13 FCC Rcd 15092 (1998).

- to assure robust competition in the video marketplace so that American consumers will have more choices at less cost;
- to promote spectrum efficiency and the rapid recovery of analog spectrum; and
- to ensure that all affected parties have sufficient confidence and certainty in order to promote the smooth introduction of digital broadcasting. [2/]

In this proceeding the Commission will determine whether the upgrade from analog to digital will be accomplished in a manner that meets the Commission's stated goals for a rapid and smooth transition. As a realistic and practical matter, the Commission must recognize that the transition will be slower, more difficult, more costly, and less certain if cable operators are permitted to block, degrade, or hinder reception of the new digital signals. A rapid and smooth transition, which would benefit American consumers and speed return of the relinquished analog spectrum, requires that cable operators not block the new digital signals from reaching American consumers in their complete, unaltered state.

While digital constitutes a very substantial improvement to analog broadcasting, it nevertheless is an upgrade, not the establishment of a new service. All existing eligible broadcasters receive digital authorizations without a new licensing process, and to ensure inseverability of the analog and digital authorizations, the Commission issues each broadcaster a

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[2/] *See, e.g., Fourth Further Notice of Proposed Rule Making and Third Notice of Inquiry* in MM Docket No. 87-268, 10 FCC Rcd 10540 at ¶ 6 (1995); *Fifth Further Notice of Proposed Rule Making* in MM Docket No. 87-268, 11 FCC Rcd 6235 at ¶ 1 (1996); *Fifth Report and Order* in MM Docket No. 87-268, 12 FCC Rcd 12809 at ¶¶ 4-6 (1997).

single paired license (not two separate licenses).[3/] The statutory provisions of the Communications Act and the Commission's rules and regulations apply to television broadcasting apply without regard to whether the signal is analog or digital. Accordingly, as a matter of law, the Commission must apply the provisions of the Communications Act, including the cable carriage provisions, to both digital as well as to analog broadcast signals.[4/]

II. STATEMENT OF INTEREST

CEMA, a sector of the Electronic Industries Alliance (EIA), is the principal U.S. trade association representing the consumer electronics industry. CEMA members design, manufacture, distribute and sell consumer electronics products, including digital and analog television receivers, video cassette recorders ("VCRs"), digital versatile disk ("DVD") players, direct broadcast satellite ("DBS") equipment, personal computers, and a wide variety of other devices that connect and enhance these products. CEMA's 450 members include all of the country's major consumer electronics manufacturers, as well as many smaller companies that design, produce, distribute, and service consumer electronics products in the United States.

[3/] *See Fifth Report and Order* at ¶ 59; *Memorandum Opinion and Order on Reconsideration of the Fifth Report and Order* in MM Docket No. 87-268, 13 FCC Rcd 6860 at ¶ 43 (1998).

[4/] 47 U.S.C. §§ 325(b) (retransmission consent), 534 (commercial station cable carriage obligations), 535 (noncommercial educational station cable carriage obligations).

III. CEMA AND ITS MEMBERS HAVE MADE MAJOR INVESTMENTS TO ENSURE THAT THE AMERICAN PUBLIC BENEFITS FROM A SUCCESSFUL ROLLOUT OF DIGITAL BROADCASTING

In November the first regularly-scheduled DTV broadcasts will radiate across the United States from stations in eleven of the top dozen markets. Consumers will be able to view digital broadcasts in New York, Los Angeles, Philadelphia, San Francisco, Boston, Washington, D.C., Dallas-Fort Worth, Detroit, Atlanta, Houston and Seattle. Pioneering stations in eleven additional markets, from Miami to Honolulu, also will initiate digital broadcasts. In total, 41 digital stations will be on the air.[5/] As early as November viewers will be able to watch football games live in full high definition digital television. In addition, several Direct Broadcast Satellite (DBS) and cable networks have announced plans for digital high definition programs.

These events signal the commencement of the digital broadcast era for which the Congress, Federal Communications Commission, broadcasters, cable operators, motion picture industry, computer companies, and the consumer electronics industry all have labored for more than a decade. Members of the consumer electronics industry have driven these efforts and have made very substantial investments in the new digital system. CEMA members already have invested almost one billion dollars in digital television. They have designed, built, and are distributing studio equipment and digital television receivers in time for the first broadcasts this November. Multiple, competing brands of DTV sets will be in stores before Christmas.

[5/]NAB, Free, Over-the-Air Digital Television: Broadcasters Deliver Digital On-Time (news release, dated October 6, 1998).

Working with broadcasters, CEMA co-founded WHD, the model DTV station in Washington, D.C. that transmits a DTV signal. CEMA also was a major proponent and funder of the Advanced Television Test Center, participated in and contributed to the FCC's Advisory Committee on Advanced Television Services (ACATS), and is a founding member of the Advanced Television Systems Committee (ATSC).

CEMA's most recent efforts have focused on facilitating a consumer-friendly transition. To alleviate and prevent any potential consumer confusion over the capabilities of various digital television sets and different broadcast video formats, CEMA, in concert with the Advanced Television Systems Committee ("ATSC"), administers a compliance self-certification program. Through this program consumers are assured that television sets displaying the DTV certification logo will receive all 18 ATSC video formats. To further assist consumers in understanding digital and high definition products and terminology, CEMA spearheaded an industry consensus on the definitions of digital television (DTV), high definition television (HDTV), and standard definition television (SDTV).[6] Earlier this year CEMA also contracted for a survey of 1,000 households to learn how consumers view DTV and transition issues. The 200-page report, "A Consumer Perspective of the Transition to Digital TV," details consumer attitudes ascertained through this survey.

This past July, CEMA also co-sponsored, with the National Association of Broadcasters (NAB), a day-long seminar to prepare for the roll-out of DTV. The event was attended by some

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[6] *See* CEMA "Industry Reaches Consensus on Digital TV Definitions (Office of the Press Secretary release, January 8, 1998).

300 executives representing all the major television manufacturers, major broadcast networks and local affiliates, national and specialty retail chains, and the computer industry. In addition, this summer CEMA conducted a 10-city DTV road show to educate retailers on DTV manufacturing, broadcasting and programming perspectives so that retailers can be a source of helpful information for consumers considering purchase of a digital receiver.

Similar to the actions of CEMA and its members, many other industries have recognized the many benefits of digital broadcasting and have cooperated to bring its benefits to the American public. Broadcasters are building stations much more rapidly than envisaged just six months ago, *supra*, and several DBS providers and cable networks also have announced plans to offer digital high definition programming. Service can be initiated so rapidly because of the determination and cooperation of many private sector companies and thousands of individuals in the broadcast, tower, antenna, satellite, and equipment industries.

Some have questioned whether consumers will purchase the new digital television sets, but the facts suggest that market penetration will be significantly more rapid than color television when introduced. One out of every four households purchases a television set every year. Over 25 million sets have been sold in each of the past five years. Nearly 250 million television sets are in use today in the United States, and some 18 million households have bought a receiver costing $2,000 or more. While the new digital sets will cost more than analog NTSC sets, especially in the early years, the new digital sets will enable a totally new experience in video viewing. The expected prices of the new digital receivers, adjusted for inflation, are no more than the first color

sets sold in 1954. Over time, their prices will drop substantially as the sales volume of digital receivers increases.

IV. CABLE CARRIAGE OF DIGITAL BROADCASTS IS STATUTORILY REQUIRED AND ESSENTIAL TO THE PUBLIC INTEREST GOALS OF A RAPID TRANSITION AND TIMELY SPECTRUM RECOVERY

Just last year when it adopted final rules to govern digital television, the Commission reaffirmed its objectives for the digital transition. The first objective it articulated was to promote and preserve free, universally available, local broadcast television in a digital world. The Commission observed that "[o]nly if DTV achieves broad acceptance can we be assured of the preservation of broadcast television's unique benefit: free, widely accessible programming that serves the public interest."[7/]

The second objective it expressed was to promote spectrum efficiency and the rapid recovery of over one-quarter of the spectrum devoted to television broadcasting.[8/] The Commission emphasized that "[t]he more quickly that broadcasters and consumers move to digital, the more rapidly spectrum can be recovered and then be reallocated or reassigned, or both."[9/]

[7/] *Fifth Report and Order*, MM Docket No. 87-268, 13 FCC Rcd 12809 at ¶ 5 (1997).

[8/] The Commission designated channels 52-69 for recovery at the end of the DTV transition, which totals 108 megahertz of the 402 megahertz devoted to analog television broadcasting. (Channel 37 is reserved exclusively for the radio astronomy service, *see* 47 C.F.R. § 73.603(c) (1997)).

[9/] *Fifth Report and Order, supra*, note 7 at ¶ 6.

The success of the transition is less certain than need be due to the uncertainty over whether cable operators will carry the broadcast digital signals. Despite all that has been accomplished, neither cable operators nor the Commission has definitively stated that cable systems will carry the digital signals. This uncertainty threatens to delay, if not undermine, the transition. Attaining the Commission's objectives will be difficult until it is known that cable systems will carry the digital broadcast signals; will deliver the signals to their customers in the FCC/ATSC standard that digital television sets are designed to receive; and will do so with the signals' full functionality intact.

There exists the very real possibility that in many communities cable operators will at least attempt to exercise their bottleneck control to deny consumers access to the new digital broadcast signals. The almost seventy percent of American consumers who rely on cable for delivery of broadcast signals will have little reason to purchase a digital broadcast receiver if they cannot be certain that they will receive the benefits. Even where signals can be received over the airwaves or are carried by some of the local cable systems, consumer uncertainty will impair the speed with which the transition proceeds.

Cable carriage of digital broadcast signals in their original, unaltered state is required by the Communications Act, is necessary to ensure a rapid and smooth transition, and due to technical innovation in cable systems need not result in deletions of multiple channels of programming. Requiring unadulterated carriage will alleviate consumer confusion, aid in a prompt and consumer-friendly transition to digital, and result in a timely return of the analog spectrum for additional uses as envisioned by Congress.

Accordingly, the Commission must require that all the features of all digital broadcast signals be available on cable systems in a manner compatible with the digital television sets used by consumers. Unless so clarified, uncertainty will depress sales and delay volume-related price decreases, thereby stretching out the analog digital transition. A successful transition within the timeframes envisaged by Congress and the Commission is feasible only if all the new digital broadcast services are available to all consumers, including cable subscribers. Delay or equivocation will increase marketplace uncertainty and impair prospects for the rapid and smooth transition intended by the Commission.

1. Statutory Cable Carriage Provisions Apply To Both Analog and Digital Broadcast Signals During the Transition Period

The statutory cable carriage provisions, including the associated non-degradation requirement, must be applied to carriage of digital broadcast channels. Section 614 of the Communications Act[10/] is unambiguous. It requires carriage of local stations. It prohibits material degradation of broadcast signals that must be carried. And it requires the Commission to amend its signal carriage requirements *to ensure cable carriage* to conform with any changes to the broadcast transmission standard. The statutory provisions make explicit reference to advanced television and not only do not exempt such signals from must carry requirements either during or after the transition, but explicitly require the Commission to ensure carriage of advanced signals. The three pertinent subsections of Section 614 read as follows:

[10/] Section 614 is codified at 47 U.S.C. § 534.

Carriage Obligation:

Each cable operator shall carry, on the cable system of that operator, the signals of local commercial television stations . . . as provided by this section.[11/]

* * *

Nondegradation

The signals of local commercial television stations that a cable operator carries shall be carried without material degradation.

* * *

Advanced television

. . . [T]he Commission shall initiate a proceeding to establish any changes in the signal carriage requirements of cable television stations necessary *to ensure cable carriage of such broadcast signals* of local commercial television stations which have been changed to conform with such modified standards. (Emphasis added.) [12/]

Arguments that these statutory provisions apply only to analog signals, and that advanced digital signals either are exempt or can be treated differently, are without merit. The statute on its face evidences that Congress contemplated the Commission adopting new advanced television

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[11/]Mandatory carriage of non-commercial stations is required separately, see Section 615 of the Communications Act of 1934, as amended, 47 U.S.C. § 535.

[12/]47 U.S.C. §534(a), (b)(4)(A), (b)(4)(B).

standards, and explicitly included these signals within the ambit of the statutory must carry requirements. Indeed, when these statutory provisions were enacted by Congress, the Commission's advanced television proceeding to consider the new transmission standard was five years old and had been the subject of substantial Congressional attention. The Commission already had adopted proposals to designate a second channel to be used while the first remains on the air for a transition period and had addressed rules to govern the transition period.[13/]

Arguments that the must carry requirement applies only to analog signals therefore contradict explicit Congressional recognition that a new transmission standard was likely to be adopted. Congress applied the carriage requirements to commercial and educational signals without distinguishing between the current analog NTSC transmission system and the advanced systems then under consideration at the Commission, and without any exception for a transition period during which both analog and digital signals are broadcast. Such arguments therefore must fail. Congress addressed cable capacity issues by exempting or limiting the number of broadcast signals that must be carried by smaller systems, and by capping the number of broadcast signals that must be carried at one-third any cable system's capacity.[14/]

[13/] *See First Report and Order* in MM Docket No. 87-268, 5 FCC Rcd 5627 (1990); *Notice of Proposed Rule Making* in MM Docket No. 87-268, 6 FCC Rcd 7024 (1991); and *Second Report and Order/Further Notice of Proposed Rule Making* in MM Docket 87-268, 7 FCC Rcd 3340 (1992).

[14/] *See* 47 U.S.C. § 534(b)(1)(B). Required carriage of noncommercial educational stations also is limited for smaller cable systems, *see* 47 U.S.C. § 535(b).

2. Cable Degradation of Digital Broadcast Signals Would Remove a Primary Incentive For a Rapid Transition, Contravene the Communications Act, and Could Interfere With the Operation of Digital Television Receivers

The benefits of digital television broadcasts include greatly improved video and audio quality and delivery of new and innovative services. Notwithstanding substantial surveys indicating that the enhanced viewing experience is one of the major attractions for consumers to further the goals of the transition by purchasing digital television receivers, some cable operators have suggested that they may alter the digital broadcast signal in order to save bandwidth or processing capacity. These operators propose to deliver to their consumers a degraded version of the original signal.

Cable operators must not be permitted to impair or degrade digital broadcast signals in any way. Instead, the Commission must require cable companies to retransmit DTV broadcast signals, including 1080i in their original format. Cable's use of its "gatekeeper" position to limit access to high definition signals would result in consumer confusion and remove incentives for a rapid transition, would be contrary to an express provision of the Communications Act, and could materially interfere with the proper operation of the consumer's television receiver.

All known digital television receiver designs include the capacity within the digital receiver itself to decode all ATSC DTV formats, including the high definition 720p and 1080i formats. Computing power in cable boxes or otherwise in the cable system therefore is not necessary in order to deliver complete digital signals to cable subscribers. If a cable operator delivers an ATSC-compliant signal to the consumer's digital television set within the standard broadcast

frequencies, the computing power of the digital television receiver will decode and use the signal to its fullest capability. No additional resources of the cable system are needed.

While cable operators for their own reasons may wish to manipulate the digital signal and process, remodulate, or demodulate it within their systems, including in cable set-top boxes, such cable processing is purely for the benefit of the cable operator. While there is no objection to cable operators converting the 8 VSB broadcast signal to other digital standards merely for the purpose of retransmitting it on their cable systems, the operator must be required to remodulate the signal back to 8 VSB or otherwise to deliver the signal to the consumer's television receiver in a useable form.

The Communications Act prohibits material degradation of broadcast signals, *supra*, and there is no technical basis upon which to exempt digital signals from the Act's proscription. To do so would in effect permit cable operators to disable provisions of their customer's digital television receivers. Consumers with new digital receivers have paid for the privilege of viewing the digital signals at the highest quality their receiver provides, and must not be prevented from doing so by their cable service provider. Understandably, such a possibility would chill consumer demand for the new digital sets and slow the whole transition process.

Finally, the degradation issue is not confined to picture resolution and audio quality. In accord with ATSC standards, digital broadcast signals contain data streams for many purposes that cable operators must be prohibited from altering or blocking. For example, information necessary to the proper operation of various features of television receivers is carried according to

the Program System Information Protocols (PSIP) standard.[15] One such feature permits television sets automatically to pair an analog channel with its associated digital channel, eliminating the need for consumers to remember channel pairings. Another feature is the data needed for the sets' so-called V-Chips to operate correctly, as required by statute. Closed captioning information and electronic program menus also are carried within data streams. All of these data streams operate with the new digital television sets, and their degradation or blocking would prevent features of the television receiver from operating as designed and intended. Furthermore, the set manufacturer would be helpless to correct the situation, since operation of the features depends upon the data stream being received, and if permitted, cable operator blocking or other impairments would differ around the country. It is hard to imagine how such interference with proper operation of the consumers' digital receivers could be in the public interest.

3. New Cable Capacity Far Exceeds That Required to Carry Digital Broadcast Signals

Fears are grossly exaggerated that applying the statutory must carry requirements to digital broadcast signals will displace substantial numbers of existing cable network channels. The majority of responsible cable operators are upgrading their systems in order to provide their customers with more channels of cable programming; to provide high-speed digital modem services for internet access; and in contemplation of carrying cable high definition channels, such

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[15] The technical protocols for carrying PSIP data were adopted by the ATSC. *See* ATSC Document A/65 (approved December 23, 1997). This standard is available on the ATSC website: www.atsc.org.

as the Discovery network and Home Box Office.[16] In contrast, broadcast stations are phasing in their digital operations over the next five years. The cable upgrades provide greatly increased capacity that far exceeds what is needed to carry both digital and analog signals for the transition period.

Many cable systems are quickly converting from analog to at least partial digital systems. A common upgrade method is to use the lowest band of spectrum to carry communications from the customer's premises to the cable headend; the adjacent "middle" band for providing analog video channels; and the upper "digital" bands for one hundred or more compressed digital channels, 20 or 30 high definition channels, video-on-demand channels and other premium programming, and digital data.[17] Of course, the sectors between these bands can be moved and re-partitioned based upon consumer demands for specific services and the equipment available. Eventually the entire bandwidth could be converted to digital. This method of partitioning cable bandwidth permits older analog cable boxes to continue to be used by subscribers not requiring the new digital services, at least for a transitional period until the cable operator requires greater capacity. An entirely digital cable system could carry five hundred or more programs with standard definition video resolution.

It is apparent that for the foreseeable future, the capacity of digital cable systems to carry broadcast signals depends more on the cable operator's allocation of bandwidth between analog

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[16] *See, e.g.* Cable Future Rides on New Services, Seminar Told, Communications Daily, September 16, 1998 at p. 6.

[17] *See, e.g.*, Leslie Ellis: Ops Endorse Modulation technology that Gives Them More Digital Expanse, Multichannel News, March 16, 1998 at Supplement Page 14A.

and digital than on the absolute finite bandwidth of the cable. So long as a standard 6 MHz channel is used consistent with the spectrum allocated for broadcasting and the signal is not modified, the cable can be connected directly to the digital television receiver and it should decode and display the digital signals just as if they had been received from an over-the-air antenna.

Cable claims of program disruption and capacity constraints are exaggerated, at best, for at least two reasons. First, in the early years the digital broadcast stations that must commence operations pursuant to the Commission's rules are concentrated in the top thirty markets that serve over 50 percent of the American population. Until May, 2002, the Commission is requiring only the four largest stations in each of the top 30 markets to convert to digital. This total -- 120 stations spread across 30 markets -- will serve as a necessary engine to speed the transition to digital broadcasting but is not of a magnitude that would spread disruption of cable programming. In addition, these are the same markets in which cable companies are rapidly rebuilding their systems to digitize program delivery and enable provision of two-way data transmissions for internet access services using high-speed cable modems.

Second, the digital upgrade adds substantial capacity that permits carrying many additional video channels. In smaller markets, where the cable rebuild may be later, commercial broadcasters also will initiate digital later. Broadcasters in markets 31 and below have until May 1, 2002 to initiate digital broadcasts (and educational broadcasters have until May 1, 2003). Non-network affiliates in the top 30 markets also are subject only to these later dates. Although stations are encouraged to begin digital broadcasting sooner, and indications are that many will

build before the deadline,[18] all 1600 broadcast stations are not requesting carriage at once. Instead, the number of digital stations requiring cable carriage will steadily increase over the next four to five years, which is the same time period during which cable systems throughout the United States are planning to add substantial capacity to their systems through the use of fiber-optics and digital technology. Many systems therefore will be in position to carry the local digital broadcast signals without dropping existing programs. It is apparent that with cable capacity increasing within the same timeframe of the digital broadcast rollout, in many instances carrying the full digital broadcast signals will not stress cable's capacity.

Finally, despite arguments to the contrary, cable systems do not need to allocate a full 6 MHz channel for every DTV signal to be carried. Rather, two 6 MHz over-the-air DTV signals can be compressed and carried in a single cable 6 MHz channel. Both types of cable digital systems, 256 QAM and 16 VSB, are capable of carrying double the amount of digital information than over-the-air broadcasting due to the closed and controlled nature of the cable signal environment. Therefore, for example, a digital cable system carrying all four network digital broadcast signals in one of the top 30 markets will require only 12 megahertz of cable capacity -- out of about 700 megahertz available. The 256 QAM and 16 VSB cable digital systems were

[18] For example, in addition to the 26 stations that volunteered to be on the air in November, 1998, 15 other stations announced that they also will be on the air. These are nationwide figures. *See* NAB press release, *supra* note 5.

designed specifically to exploit this efficiency.[19] In short, the 6 MHz over-the-air broadcast signal can be carried in its entirety over cable in just 3 MHz of bandwidth.

V. COMPATIBILITY BETWEEN CABLE SYSTEMS AND DIGITAL TELEVISION RECEIVERS MUST BE ASSURED

CEMA has an aggressive commitment to resolving DTV compatibility issues for the benefit of the American consumer. The consumer electronics industry has been and will remain in the forefront diligently working to ensure that cost-effective options exist which permit consumers to obtain full performance from their home consumer digital equipment.

The digital television sets sold this Fall will be able to receive ATSC-compliant signals on broadcast frequencies whether delivered over the air or by cable. The issue is whether cable systems will provide the signals or connections necessary for the digital receivers to operate properly when connected to cable. Generally speaking, cable systems and digital television receivers operating together need be no more complex than hooking cable up to today's NTSC equipment

As the Commission is aware, the consumer electronics and cable industries have been engaged in a cooperative effort to complete the basic definition as well as the copyright protection aspects of the IEEE-1394 standard. The IEEE 1394 standard being worked on is a second or third generation option, but is by no means the sole method to interconnect digital devices and maintain full functionality. It is important to re-emphasize that, contrary to some reports, first

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[19] Some early digital cable systems use 64 QAM instead of 256 QAM. Even the older 64 QAM transports 27 mbps within a 6 MHz channel, substantially more than the 19.3 mbps required for DTV broadcast signals. Consequently, on such systems, an equivalent to a little over 4 MHz would be needed for carrying a complete over-the-air signal.

generation digital television sets are capable of fully functioning with broadcast digital signals that are passed through cable systems, provided that cable operators use appropriate connections and frequencies.

CEMA is proceeding with multiple technical solutions to link cable and other set-top boxes to television receivers. These efforts are designed to ensure that consumer digital television sets will be fully functional when used with other digital program sources, such as DBS, DVD players, and digital VCRs, as well as cable systems. The alternatives to accomplish this compatibility are discussed below.

1. The Commission Should Aggressively Promote Industry Adoption of Technical Standards for Cable-Ready DTV Receivers

The Commission must do everything possible to encourage the industry adoption of standards necessary to allow manufacturers to design cable-ready DTV receivers. CEMA has been working diligently toward that goal. Promoting the availability of "cable-ready" digital sets is the most effective way to cut through the signal encryption and copyright issues that continue to delay standards for connecting television sets to cable systems.

In enacting the cable/consumer electronics compatibility provisions, Congress explicitly acknowledged that " television receivers and video cassette recorders often contain premium features and functions that are disabled or inhibited" by cable companies. It correctly found that "[i]f these problems are allowed to persist, consumers will be less likely to purchase, and electronics equipment manufacturers will be less likely to develop, manufacture, or offer for sale, television receivers and video cassette recorders with new and innovative features and

functions. . . ."[20] Congress went on to find that compatibility can be assured with narrow technical standards that mandate a minimum degree of common design and operation; to require that the Commission issue regulations as necessary to assure compatibility; and further, to require the Commission to review the regulations periodically and to modify them if necessary, in order to, *inter alia,* "reflect improvements and changes in cable systems, television receivers, video cassette recorders, and similar technology."[21]

Pursuant to the statutory cable compatibility provisions, the Commission asked CEMA and NCTA to form an advisory group representing both industries to jointly consider compatibility issues. The two associations formed the Cable Consumer Electronics Advisory Group (C3AG) for this purpose. Last June, as part of the C3AG process, the TV/VCR caucus of the C3AG referred to the NCTA a proposal for a "cable ready" digital standard. NCTA has not responded.[22]

The caucus' proposals generally would adopt a family of standards that would rely on individual standards either already adopted or in the process of being drafted by EIA, ATSC and/or the Society of Cable Television Engineers ("SCTE"). Adopting such standards would ensure interoperability between cable systems and home consumer equipment in a prompt and efficient manner.

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[20] 47 U.S.C. § 544a (1), (2).

[21] *Id.* at 544a(d).

[22] *See* Letter from Gary Shapiro, CEMA, to Chairman Kennard (September 10, 1998) forwarding proposed standards for cable-ready DTV receivers.