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

In the Matter of	)	
	)	
Implementation of Section 304 of the Telecommunications Act of 1996	)	CS Docket No. 97-80
	)	
	)	
Commercial Availability of Navigation Devices	)	
	)	

REPORT AND ORDER

Adopted: June 11, 1998 **Released: June 24, 1998**

By the Commission: Chairman Kennard and Commissioner Ness issuing separate statements; Commissioner Powell dissenting in part and issuing a statement.

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I. INTRODUCTION

1. In this *Report and Order* ("*Order*") we adopt rules to address the mandate expressed in Section 629 of the Communications Act to ensure the commercial availability of "navigation devices,"[1] the equipment used to access video programming and other services from multichannel video programming systems. The purpose of Section 629 and the rules we adopt is to expand opportunities to purchase this equipment from sources other than the service provider.[2]

2. The Telecommunications Act of 1996 ("1996 Act") established a fundamental premise for the direction of telecommunications markets.[3] The amendments reflected in Section 629 are in keeping with the 1996 Act's general goal of "accelerat[ing] rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition."[4] As navigation devices are the means to deliver analog and digital communications, competition in the navigation equipment market is central toward encouraging innovation in equipment and services, and toward bringing more choice to a broader range of consumers at better prices.

3. Competition in the markets involved is in an early stage of development and the enormous technological change resulting from the movement from analog to digital communications is underway. This *Order* provides incentives for market forces to operate. We find, however, that certain parameters are necessary to ensure the movement of navigation devices toward a fully competitive market. In particular, (1) a separation of conditional access or security functions from other functions must take place; (2) modular security components must be made available by July 1, 2000; (3) phase out of devices that have security and non-security functions combined must occur by January 1, 2005; (4) information sufficient to permit the manufacture, retail sale, and attachment of devices must be made available and; (5) service providers must be able to protect their operations from technical harm and theft of service. As circumstances are changing rapidly, our commitment to pursue competition means we will carry on

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[1]In this proceeding, we define "navigation devices" as converter boxes, interactive equipment, and other equipment used by consumers within their premises to receive multichannel video programming and other services offered over multichannel video programming systems. Throughout this document, we use the term navigation devices as shorthand for equipment fitting this definition.

[2]47 U.S.C. § 549. Section 629 was adopted as part of the Telecommunications Act of 1996. Pub. L. No. 104-104, 110 Stat 56 (1996) ("1996 Act").

[3]The Conference Report to the 1996 Telecommunications Act characterized the intent of Congress as being:

> to provide for a pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector development of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition . . . .

S. Conf. Rep. 104-230, 104th Cong. 2d Sess. at 113 (1996) (Joint explanatory statement of Committee of Conference).

[4]*Id.*

an ongoing examination of market developments to determine if we are fulfilling the objectives of the 1996 Act, and Section 629 in particular.

II. BACKGROUND

4. Section 629 instructs the Commission to:

> adopt regulations to assure the commercial availability, to consumers . . . of . . . equipment used . . . to access multichannel video programming and other services offered over multichannel video programming systems, from manufacturers, retailers, and other vendors not affiliated with any multichannel video programming distributor.[5]

In addition, our rules "shall not prescribe regulations . . . which would jeopardize security of . . . services offered over multichannel video programming systems, or impede the legal rights of a provider of such services to prevent theft of service."[6]

5. Section 629 does not prohibit service providers from offering equipment to their subscribers. Multichannel video programming distributors may themselves continue to offer equipment "if the system operator's charges to consumers for such devices and equipment are separately stated and not subsidized by charges for" multichannel video programming and other services.[7] Section 629 also states that the rules adopted under Section 629 shall cease to apply when the Commission determines that the markets involved are fully competitive and that elimination of the regulations would promote competition and be in the public interest.[8] The statute also provides that nothing in Section 629 is to be construed "as expanding or limiting any authority that the Commission may have under law in effect before the date of enactment of the Telecommunications Act of 1996."[9]

6. The House Report noted that "competition in the manufacturing and distribution of consumer devices has always led to innovation, lower prices and higher quality. Clearly, consumers will benefit from having more choices among telecommunications subscription services arriving by various distribution sources."[10]

7. In the *Notice of Proposed Rule Making ("NPRM")*, we stated our belief that the overarching goal of this proceeding was to assure competition in the availability of set-top boxes and other customer

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[5]47 U.S.C. § 549(a).

[6]47 U.S.C. § 549(b).

[7]47 U.S.C. § 549(a).

[8]47 U.S.C. § 549(e).

[9]47 U.S.C. § 549(f).

[10]H.R. Rep. No. 104-204, 104th Cong., 1st Sess. 112 (1995).

premises equipment ("CPE").[11] Additionally, in the *NPRM*, we noted the interest service providers have in protecting system and signal security and in preventing theft of service, and stated our intent to adopt rules that assured adequate protection of service providers' networks from harm from any device used by consumers. Also, we stated our belief that by stimulating equipment innovation, we would maximize consumer choice and flexibility, and stated our preference for minimizing regulation in the equipment design and installation process.

III. SUMMARY

8. This *Order* adopts rules and policies implementing Section 629. The decisions made in this *Order* may be summarized as follows:

- Section 629 is broad in terms of the multichannel video programming distributors ("MVPDs") covered including cable television, direct broadcast satellite ("DBS"), multichannel multipoint distribution service ("MMDS") and satellite master antenna television ("SMATV"). We determine that open video system operators are not covered as a consequence of the specific open video system provisions of the Communications Act which exclude open video system operators from certain regulations applicable to cable operators.

- Section 629 covers not just equipment used to receive video programming, but also equipment used to access "other services offered over multichannel video programming systems." Such equipment includes televisions, VCRs, cable set-top boxes, personal computers, program guide equipment, and cable modems. The focus of Section 629, however, is on cable television set-top boxes, devices that have historically been available only on a lease basis from the service provider.

- Subscribers have the right to attach any compatible navigation device to a multichannel video programming system. We conclude that the core requirement, to make possible the commercial availability of equipment to MVPD subscribers, is similar to the *Carterfone* principle adopted by the Commission in the telephone environment. The *Carterfone* "right to attach" principle is that devices that do not adversely affect the network may be attached to the network. The *Order* also notes that commercial availability is furthered only if consumers are aware of the availability of equipment from alternative sources.

- Service providers are prohibited from taking actions which would prevent navigation devices that do not perform conditional access functions from being made available by retailers, manufacturers, or other unaffiliated vendors.

- Cable operators and other MVPDs can take the necessary steps to guarantee the security of their systems and their programming. The *Order* reaffirms the provisions in the Communications Act that prohibit the manufacture, sale and distribution of equipment designed to allow for the unauthorized reception of service.

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[11] *Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices*, CS Docket No. 97-80, *Notice of Proposed Rule Making*, 12 FCC Rcd 5639, 5641 (1997) ("*NPRM*").

- MVPDs must separate out security functions from non-security functions by July 1, 2000. An exception is made for navigation devices that operate throughout the continental United States and are commercially available from unaffiliated sources, which includes DBS. Our rules rely heavily on the representations of the various interests involved that they will agree on relevant specifications, interfaces, and standards in a timely fashion, thus permitting the manufacture and sale of navigation devices.

- MVPDs may offer devices that have security and non-security functions integrated until January 1, 2005. As of that date, no MVPD shall provide new navigation devices for sale, lease, or use that perform both conditional access functions and other functions in a single integrated device. In the year 2000, once separate security modules are available, we will assess the state of the market to determine whether that time frame is appropriate and we will review the mechanics of the phase out of boxes that have combined security and non-security functions.

- MVPDs must provide, upon request, technical information concerning interface parameters that are needed to permit navigation devices to operate with their systems.

- Existing equipment rate rules applicable to cable systems not facing effective competition fulfill the statute's requirement prohibiting subsidies.

- The *Order* adopts rules implementing the statute's waiver and sunset provisions.

- The Commission will monitor developments with respect to the availability of information to consumers, retailers, and manufacturers necessary to the functioning of a commercial retail market for navigation equipment, as well as developments relating to standard means of attaching and using equipment with the networks of service providers.

- The Commission will also monitor developments with respect to the compatibility of set-top boxes and digital televisions, and the availability of program guides.

9. As we stated in the *NPRM*, the multichannel video programming systems subject to Section 629, including cable television, direct broadcast satellite ("DBS"), and multichannel multipoint distribution service ("MMDS") typically consist of a central signal processing or switching center, a transmission network from that facility to user locations, and customer premises equipment that controls access to the network and specific communications on it, and displays or stores picture, sound, and data information.[12] Cable television operators and other providers have not discouraged customer ownership of television receivers, radio receivers, and video cassette recorders that receive and display the communications transmitted.

10. Equipment, however, that controls the security aspects of access to programming from cable operators and some other MVPDs has generally only been available for lease so that only those who subscribe may receive service. Signal security control or descrambler units tend to be combined with

[12] *NPRM*, 12 FCC Rcd at 5642.

other control equipment such as signal tuners and remote controls.[13] In contrast, customer ownership of satellite earth stations receivers and signal decoding equipment has been the norm in the DBS field.[14] Even in DBS, however, where customer ownership of equipment is common, the service provider may control the technical design of the equipment involved by licensing the technology used.[15]

11. The competitive market for consumer equipment in the telephone context provides the model of a market we have sought to emulate in this proceeding.[16] Previously, consumers leased telephones from their service provider and no marketplace existed for those wishing to purchase their own phone. The *Carterfone* decision allowed consumers to connect CPE to the telephone network if the connections did not cause harm.[17] As a result of *Carterfone* and other Commission actions, ownership of telephones moved from the network operator to the consumer. As a result, the choice of features and functions incorporated into a telephone has increased substantially, while the cost of equipment has decreased.

12. The parallel to the telephone has limitations. When customer ownership of telephone CPE became available, the telephone network was effectively a national monopoly. Well developed technical standards existed throughout an almost ubiquitous network. CPE compatible with the telephone network was part of this environment. In contrast, cable networks do not reflect universal attributes, and have substantially different designs. Nor do satellite systems share commonality beyond the most basic elements. Additionally, as Section 629 recognizes, preventing interference to other network users and maintaining the integrity of the system signal is of greater concern for video delivery systems than for telephone systems.[18] This *Order* seeks to accommodate these differences from the telephone model.

13. The steps taken in this *Report and Order*, if implemented promptly and in good faith, should result in an evolution of the market for navigation devices so that they become generally and competitively available through commercial retail outlets. To facilitate the emergence of a competitive marketplace for navigation equipment, we adopt several rules to make navigation devices commercially available as quickly as possible. For example, we require certain MVPDs to offer separate security modules and preclude MVPDs from offering navigation devices that perform both conditional access functions and other functions in a single device after January 1, 2005.

14. This *Report and Order* is premised on the assumption that commercial interests, fueled by

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[13] *Id.*

[14] SBCA Comments at 4; *see also* DIRECTV Comments at 7.

[15] *Id.* at 5643.

[16] *Id.* at 5644.

[17] *See Carterfone*, 13 FCC 2d 420 (1968), *recon. denied*, 14 FCC 2d 571 (1968); *Telerent Leasing Corp. et al.*, 45 FCC 2d 204 (1974), *aff'd sub nom. North Carolina Utilities Commission v. FCC*, 537 F.2d 787 (4th Cir. 1976), *cert. denied*, 429 U.S. 1027 (1976); *Mebane Home Telephone Co.*, 53 FCC 2d 473 (1975), *aff'd sub nom. Mebane Home Telephone Co. v. FCC*, 535 F.2d 1324 (D.C. Cir. 1976).

[18] *See* H. R. Rep. No. 104-204, 104th Cong., 1st Sess. 112 (1995).

consumer demand, will agree on specifications for digital navigation devices to be submitted to standard-setting organizations, or that common interfaces will emerge that become widely accepted. For the cable television industry, the OpenCable™ project is an initiative being managed through Cable Television Laboratories, Inc. ("CableLabs")[19] to develop key interface specifications to foster interoperability among digital navigation devices manufactured by multiple vendors.[20] According to CableLabs, it has opened its specifications to several vendors rather than designating a single proprietary solution, with the goal of introducing digital cable ready television sets and other navigation devices into retail distribution.[21] The rules we adopt in this *Order* are premised on the representation that the OpenCable initiative will continue, and that others will be undertaken. We expect that entities outside of the membership of CableLabs will be able to participate in the eventual standards setting process.

15. We do not believe, however, that our work with respect to these issues is complete. The markets involved are in the early stages of becoming competitive, and the participants in these markets are on the precipice of a change from analog to digital communications. Because of these changes, this is both a particularly opportune and a particularly perilous time for the adoption of regulations. It is opportune because new patterns are being established and no large embedded base of equipment exists that constrains change.[22] It is perilous because regulations have the potential to stifle growth, innovation, and technical developments at a time when consumer demands, business plans, and technologies remain unknown, unformed or incomplete.

16. Our objective thus is to ensure that the goals of Section 629 are met without fixing into law the current state of technology.[23] In addition to enforcing the rules we adopt in this *Order*, we intend to monitor the progress of participants in these markets to ensure that the devices continue in the direction

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[19]CableLabs is a research and development consortium of cable operators representing more than 85% of the cable subscribers in the United States, 75% of the cable subscribers in Canada, and 12% of the cable subscribers in Mexico. NCTA Comments at 32, n. 62. CableLabs acts as a clearinghouse to provide the cable industry with information on current and prospective technological developments and works with other industries to develop interoperable specifications for proposals to national and international standards bodies. *Id.*

[20]*See* NCTA Comments at 32 (stating that 85% of the industry is involved in OpenCable). We note that not all of the cable television industry is involved in the OpenCable process and no entities outside of the cable industry are currently participating. *See* OpenCable website at <http://www.cablelabs.com>. *See also* Letter from Karen B. Possner, Vice-President, Strategic Policy, BellSouth, June 2, 1998.

[21]OpenCable website at <http://www.cablelabs.com>, 5/4/98 at 3. In Spring 1998, CableLabs released service requirements and functional requirements to the vendor community for their review and comment. These requirements describe what services and technical capabilities will be required in the navigation device and reflect responses from the consumer electronics and computer industries to a request for information from CableLabs.

[22]While some service providers have placed large orders for certain devices that have attracted industry attention, these commitments appear to be flexible enough to accommodate any requirements adopted herein.

[23]The portion of the Conference Report for the 1996 Telecommunications Act discussing navigation devices states the Commission should "avoid actions which could have the effect of freezing technologies and services. . . . Thus, in implementing this section, the Commission should take cognizance of the current state of the marketplace and consider the results of private standards setting activities." *Id.* at 181.

of portability, interoperability, wider availability, and increased consumer choice. If we find that market participants are not complying with our rules or are not progressing satisfactorily towards the principles and goals of this proceeding, the Commission will revisit the decisions and take further action to ensure a competitive marketplace and consumer choice in navigation devices. In particular, we will monitor developments with respect to the availability of information to consumers, retailers, and manufacturers necessary to the functioning of a commercial retail market for navigation equipment, as well as developments relating to standard means of attaching and using equipment with the networks of service providers. Further, the broad goals of this proceeding extend beyond making navigation equipment commercially available, but in fulfilling the promise of the digital age to bring broader choices and opportunities to a wider group of consumers. If, for example, service providers retain the ability to limit substantially consumer access to content, applications, and other services, this result would not achieve the important goals of the statute. We intend to monitor developments with respect to the compatibility of set-top boxes and digital televisions, and the availability of program guides.

17. There is further risk in moving to an environment where new devices are commercially available. With the technology and market developing, it is unclear how efficiently the market will respond if consumers purchase devices that may not perform all of the functions in the manner that the consumer envisioned. The ability of the consumer to adjust to separate functions of the manufacturer, service provider, and retailer, instead of relying on the service provider alone, will also provide a challenge if the market does not respond adequately. Notably, if neither the manufacturer, retailer nor service provider appear responsible to the consumer for the device's reliability and functionality, the goals of Section 629 are undermined. We also recognize that commercial availability is furthered only if consumers are aware of the availability of equipment from alternative sources.[24]

18. Section 629's broad goals are especially important to bringing the substantial benefits of digital technology to all Americans. Section 629 may, with its broad goals, require the Commission to examine circumstances where commercial availability does not evolve and access to programming and services is encumbered. We remain committed to these goals.

IV. ANALYSIS AND DISCUSSION OF RULES AND POLICIES

A. Entities Covered by Section 629

19. *Background.* Section 629 is applicable by its terms to equipment used to access services over multichannel video programming systems. Specifically, Section 629(a) of the Act states:

> The Commission shall, in consultation with appropriate industry standard-setting organizations, adopt regulations to assure the commercial availability, to consumers of

[24]For example, in our 1983 proceeding to detariff customer premises equipment, AT&T was required to notify its customers that they had the option to purchase or continue leasing their customer premise equipment from a separate subsidiary of AT&T. *Procedures for Implementing the Detariffing of Customer Premises Equipment and Enhanced Services (Second Computer Inquiry)*, CC Docket No. 81-893, *Report and Order*, 95 FCC 2d 1276, 1415 (1983).

multichannel video programming and other services offered over multichannel video programming systems, of converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming and other services offered over multichannel video programming systems, from manufacturers, retailers, and other vendors not affiliated with any multichannel video programming distributor . . . .[25]

20. In the *NPRM*, we tentatively concluded that Section 629 appears to be jurisdictionally broad as to the multichannel video programming systems covered. We sought comment on this conclusion. We also sought comment on whether to exclude open video system operators from Section 629.

21. *Discussion.* We agree with the tentative conclusion in the *NPRM* that Section 629 is jurisdictionally broad in terms of the multichannel video programming systems to which it applies. As we noted in the *NPRM*, although the term "multichannel video programming system" is not defined in Section 629, Section 602(13) defines a multichannel video programming "distributor" as "a person such as, but not limited to, a cable operator, a multichannel multipoint distribution service, a direct broadcast satellite service, or a television receive-only satellite program distributor, who makes available for purchase, by subscribers or customers, multiple channels of video programming . . . . " To ensure the commercial availability of equipment used to access multichannel video programming and other services, the rules we adopt here will be applied to MVPDs as defined by Section 602(13).[26] As advocated by NCTA, Ameritech, and other commenters, we believe that Section 629 requires that the Commission apply the commercial availability requirements to all multichannel video programming systems.[27] Section 76.1200 of the rules defines the entities to which the rules apply.

22. We disagree with the comments of several parties that Section 629 should apply only to cable television systems.[28] There is no basis in the law, or the record of this proceeding, to support a conclusion that the statutory language does not include all multichannel video programming systems. Our reading of the law is that consumer choice in navigation devices for all multichannel video programming systems was mandated by Congress when it enacted Section 629. Our decision and rules, however, recognize the differences between various providers and, as discussed below, the rules are intended to recognize the fact that DBS reception equipment is already nationally portable and commercially available. Moreover, we believe that the waiver process can sufficiently address the concerns of developing MVPDs and reject the comments that developing MVPDs, such as local multipoint distribution systems ("LMDS"), should be excluded from the application of Section 629.[29]

23. Section 653(c)(1) does require exclusion of open video systems operators from the

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[25]47 U.S.C. § 549(a).

[26]47 U.S.C. § 522(13).

[27]Ameritech Comments at 4; Circuit City Comments at 14; GTE Comments at 4; ITI Comments at 27; NCTA Comments at 15; Tandy Comments at 3; TW Comments at 23; Uniden Comments at 2; US West Comments at 9.

[28]DIRECTV Comments at 10; PrimeStar Comments at 7; SBCA Comments at 3.

[29]*See* Cellular Vision Comments at 8.

requirements of Section 629. In addressing what provisions of Title VI apply to open video systems, Section 653(c)(1) states that any section of Part III of Title VI of the Communications Act that applies to cable operators shall not apply to open video system operators. Section 629 is in Part III, and applies to cable operators. Several commenters agree that Section 653 exempts open video system operators from the Section 629 requirements,[30] while others espouse that the Commission has authority to apply any rules adopted in this proceeding to open video systems.[31] Section 653 makes no distinction between rules that apply only to cable operators and rules applicable to all MVPDs. Section 653(c)(1)(C) lists those sections of Parts III and IV that apply to open video system operators and the list does not include Section 629. Had Congress intended that Section 629 apply to open video system operators, it would have been listed in Section 653(c)(1).

B. Equipment Covered

24. *Background.* In the *NPRM*, we noted that Section 629 is broad in terms of the types of equipment to which it is applicable.[32] We stated that certain equipment existing or under development might be within the scope of the statute such as cable television converters, electronic program guide equipment, modems, and network interface modules. Additionally, we sought comment on our conclusion that some equipment does not appear to require Commission action to assure that its availability fulfills the mandate of Section 629. We sought comment as to what equipment is encompassed by Section 629.

25. *Discussion.* The language of Section 629 indicates that Congress sought to have the marketplace offer consumers a choice over a broad range of equipment. Section 629(a) enumerates "converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming and other services . . ."[33] We believe that the statutory language of Section 629 indicates that its reach is to be expansive and that Section 629 neither exempts nor limits any category of equipment used to access multichannel video programming or services offered over such systems from its coverage.[34] Equipment used to access video programming and other services offered over multichannel video programming systems include televisions, VCRs, cable set-top boxes, personal computers, program guide equipment and cable modems. Section 76.1200(c) of the rules defines the equipment to which the rules apply.

26. The purpose of this proceeding is to make navigation devices commercially available, rather than to create a market for certain specific equipment. Just as the *Carterfone*[35] decision resulted in the

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[30]BANX Comments at 5; GI Comments at 48; PacBell Comments at 5.

[31]CEMA Comments at 11; CERC Comments at 15; US West Comments at 9.

[32]*NPRM*, 12 FCC Rcd at 5647.

[33]47 U.S.C. § 549(a).

[34]*See e.g.*, Americast Comments at 5; BANX Comments at 5; StarSight Reply at 20; Uniden Comments at 20; WCA Reply at 11.

[35]*Carterfone*, 13 FCC 2d 420 (1968), *recon. denied*, 14 FCC 2d 571 (1968).

availability to the consumer of an expanding series of features and functions related to the use of the telephone, we believe that Section 629 is intended to result in the widest possible variety of navigation devices being commercially available to the consumer. The expansive nature of the language of Section 629 is a recognition that the future convergence of various types of equipment and services may result in technical innovations not foreseeable at this time.[36]

27. Commenters seek exceptions from Section 629 for certain types of equipment, such as navigation devices already available in the marketplace,[37] equipment performing security or access control functions,[38] personal computers,[39] enhanced non-video services,[40] and cable modems.[41] Some commenters contend that we should exempt analog equipment.[42] As noted above, Section 629 applies to all types of equipment, including analog, hybrid analog/digital and digital equipment.[43] We note, however, that to the extent that analog, or other, equipment, presents concerns regarding security, our rules accommodate such concerns.[44] Some commenters express concern that the rules will be applied to the embedded base of current equipment.[45] While the statute requires commercial availability of equipment, we believe that this is intended to apply to equipment deployed and placed in service in the future and not to the embedded

[36]GTE and Ameritech both support having the definition of equipment tied to the function of receiving services from the MVPD system. GTE Comments at 6; Ameritech Comments at 6.

[37]Ameritech Comments at 24; BSA Comments at 5; GI Comments at 43; ITI Comments at 30; PrimeStar Comments at 17; Zenith Comments at 10.

[38]GI Comments at 44; NCTA Comments at 19; SA Comments at 15; TW Comments at 21; WCA Reply at 11

[39]Zenith Comments at 11.

[40]Americast Comments at 6; TW Comments at 21; US West Comments at 10.

[41]DIRECTV Comments at 6; GTE Reply at 8; Motorola Comments at 14; NCTA Reply at 38; US West Comments at 10.

[42]Ameritech Comments at 24; Echelon Comment at 49; GI Comments at 40; GTE Comments at 6; TIA Comments at 14; SA Comments at 20; TW Comments at 34; Zenith Comments at 4.

[43]Analog equipment processes analog signals -- voice, video, data -- wherein the signal received is a continuous waveform which is analogous to the original signal. Digital equipment processes digital signals -- voice, video, data -- wherein the signal received is a waveform which carries a discrete stream of binary codes of ones and zeros. Hybrid analog/digital equipment is equipment that is capable of receiving and processing analog and digital signals. Although the hybrid equipment processes the analog and digital signals independently, the processes share some common components.

[44]*See* Section IV(F), *infra*, for a discussion of provisions in rules designed to protect system security.

[45]GTE Comments at 6; NCTA Comments at 12.

base of equipment.[46]

C. Right to Attach

28. *Background.* In the *NPRM*, we proposed as a core requirement that there be a "right to attach" allowing subscribers to acquire and attach to the network equipment not part of an MVPD's network distribution plant. Following the *Carterfone* principle adopted in the telephone context would allow subscribers the option of owning their own navigation devices and would facilitate the commercial availability of equipment.

29. *Discussion.* To achieve the statutory requirement of alternative sources of navigation devices, we mandate that subscribers have a right to attach any compatible navigation device to an MVPD system, regardless of its source, subject to the proviso that the attached equipment not cause harmful interference, injury to the system or compromise legitimate access control mechanisms. This rule is found in Sections 76.1201 (Right to Attach), 76.1203 (Incidence of Harm), and 76.1209 (Theft of Service). This rule makes clear to subscribers that an MVPD is not the exclusive purveyor of navigation devices for its system. We believe, as in the telephone context, that the right to attach leads to a broader market for equipment used with MVPD systems. Manufacturers will have substantial incentive to develop and distribute new products in response to consumer demands for equipment and features, provided that the MVPD system for which the equipment is designed is accessible.[47] We agree with Time Warner that the marketplace, not the MVPD, should determine the price and features of navigation devices available to subscribers.[48]

30. In addition to being directly restrained from attaching navigation equipment, consumers must also not be precluded from the possibility of obtaining equipment from commercial outlets by virtue of contractual or other restrictions on the availability of equipment that the service provider might seek to directly impose on suppliers of equipment. The rules (§76.1202) thus additionally enforce the right to attach by precluding contractual or other arrangements, other than those involving equipment performing conditional access or security functions, that prevent navigation devices from being made available to subscribers from retailers, manufacturers, or other vendors that are unaffiliated with that such service provider.

31. The right to attach is supported by numerous commenters.[49] CEMA contends that the right to attach would form a solid basis for encouraging the development of a marketplace characterized by portability and interoperability.[50] Motorola believes that allowing a subscriber a right to attach is

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[46]Ameritech Comments at 24; Echelon Comments at 49; GI Comments at 40; GTE Comments at 6; TIA Comments at 14; SA Comments at 20; TW Comments at 34; Zenith Comments at 4.

[47]Motorola Comments at 10.

[48]TW Comments at 31.

[49]BSA Comments at 4; CE Comments at 2; Circuit City Comments at 22; ITI Comments at 5; Motorola Comments at 10; TIA Comments at 11.

[50]CEMA Comments at 6.

consistent with the 1996 Act's major objective to promote competition and consumer choice in the market for certain types of equipment because this right gives consumers greater freedom to select among alternative products.[51]

32. We recognize commenter's concerns regarding system security, signal leakage, and other harms which may arise from equipment attachments to MVPD systems, and will prescribe limitations to a subscriber's right to attach.[52] We agree that the right to attach must be subject to the limitation that the equipment does not harm the MVPD networks. As noted by Motorola, harm could take any number of forms, including physical damage to the MVPD system, compromise of system security, or electronic interference to other users on the system.[53] The rules we adopt allow the MVPD to avoid these threats. Recognizing an MVPD's statutory right to prevent theft of service, the rule we adopt specifically states that the right to attach does not apply to any equipment which can be used to receive, or assist in the unauthorized reception of service. Commenters agree that this restriction on the right to attach is consistent with the language of Section 629 regarding security of services.[54]

D. Information on Technical Interface Specifications

33. *Background.* We asked in the *NPRM* whether it would be necessary for consumers purchasing equipment to have access to basic technical information regarding the network the equipment will be attached in order to make purchasing decisions. We proposed that if this information is not readily available we would require MVPDs to make it available.

34. *Discussion.* Several commenters urge the Commission to adopt network disclosure requirements for MVPDs similar to the requirements of Part 68 rules[55] for connection to a telephone system as a means to allow a commercial market to develop.[56] The intent of such a disclosure requirement is to allow interested parties a means to ascertain the specifications of a particular MVPD. This information is needed by manufacturers, retailers, and subscribers to determine if a particular navigation device is compatible with various MVPDs. We believe that a requirement to disclose information will assist retailers as the commercial market develops as a source for navigation devices and will aid consumers seeking to buy their own navigation devices. Accordingly, we will require that MVPDs provide to the requesting party the technical information concerning interface parameters necessary for a navigation device to operate with the services delivered by the MVPD's system. This rule is found in

[51]Motorola Comments at 11.

[52]Circuit City Comments at 22; ITI Comments at 25; Motorola Comments at 13; NCTA Comments at 5; TW Comments at 15; WCA Reply at 12.

[53]Motorola Comments at 13.

[54]TW Comments at 15. *See* Part IV(E), (G), *infra,* for a discussion of an MVPDs ability to prevent harmful interference and signal leakage.

[55]47 C.F.R. § 68.110(b).

[56]Circuit City Comments at 22; CEMA Comments at 51; CERC Comments at 29; ITI Comments at 7.

Section 76.1205. As discussed below, we will not replicate the more complete interface specification rules of the type used in Part 68 in the telephone context[57] because we think it appropriate at this phase of the regulatory process that MVPDs develop the standards necessary for equipment manufacturers to make attaching equipment.[58] We will monitor closely industry progress on development of standards for attaching equipment, as well as MVPD compliance with the network disclosure requirements.

E. Protection of Network Facilities

35. *Background.* In the *NPRM*,[59] we concluded that in implementing Section 629 we must ensure that a navigation device does not cause harm to the network to which it is attached and that the technical integrity of the network be maintained.[60] We sought comment on three possible options to protect network facilities: 1) replicating or expanding the Part 68 process;[61] 2) requiring network service providers, subject to Commission oversight, to establish and enforce their own standards; and 3) either separately or in combination with one of the above options, mandating a technical solution in terms of a network protection device.

36. *Discussion.* We will allow service providers to establish and enforce their own reasonable standards to define harm to their facilities. As in other areas addressed in this *Order*, our decision relies in part on the industry standards that have been developed or are being developed. Where protocols for a range of capabilities are established, not only can equipment be manufactured and sold by other means than through the service provider, but what will harm the network can become widely known. Notably, the process by which protocols are established includes the participation of service providers, manufacturers and others, lending a comprehension to the needs of the network. Additionally, we accept the commitment of many MVPDs to make navigation devices and other non-security equipment located on the customer's premises commercially available, as this environment enhances overall consumer benefit and will accrue benefits to the MVPDs.[62] With this commitment comes an incentive by manufacturers and service providers to ensure that equipment does not harm the network.

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[57] *See* 47 C.F.R. § 68.500.

[58] In many cases, MVPDs are already using a standard connector and thus in the cable television *Inside Wiring Proceeding*, we noted that the type of connector used had become the de facto connector for services delivered via coaxial cable and further government action in this area was unwarranted. See *Telecommunications Services Inside Wiring*, CS Docket No. 95-184, *Report and Order and Second Further Notice of Proposed Rulemaking*, FCC 97-376, 10 Communications Reg. 193 at ¶ 248 (Oct. 17, 1997) ("*Inside Wiring Order*").

[59] *NPRM*, 12 FCC Rcd at 5664.

[60] This is primarily a concern of wired service providers. Customer premises equipment is not typically directly connected to radio spectrum using MVPD networks such as MMDS or DBS systems.

[61] Part 68 of the Commission's Rules govern the terms and conditions under which CPE and customer wiring may be connected to the telephone network. Included in Part 68 regulations are technical standards, network disclosure requirements, and an equipment registration program. 47 C.F.R. Part 68.

[62] TW Reply at 2; US West Comments at 2.

37. Under our rules, MVPDs will have the ability to determine what will cause harm to the network. We are reluctant at this time to attempt to enumerate in detail what these circumstances might be. As technology and services are continually evolving, we do not think we can replicate in our rules the proper balance. Allowing MVPDs to have the ability to establish and enforce their own technical standards to prevent harm to their systems has support among several commenters.[63] GI concurs that allowing MVPDs to establish and enforce their own standards will minimize theft of service and network harm.[64]

38. Our rules will allow MVPDs to restrict the attachment or use of equipment to their systems where electronic or physical harm would be caused by the attachment or operation of such equipment. We will allow an MVPD to discontinue service if harm to the system is likely to occur. MVPDs must publish, and provide to subscribers, standards and descriptions of devices that may not be used or attached to their systems because of the potential for harm.[65] These requirements are found in Section 76.1203. These standards shall be used only to prevent attachment of navigation devices that raise reasonable and legitimate concerns of electronic or physical harm or theft of service, and not as a means to unreasonably restrict the use of navigation devices obtained from a source other than the MVPD. To the extent that there is a dispute whether an MVPD's equipment restrictions are unreasonable, the Commission's petition procedures are available.[66]

39. We do not believe that an equipment registration process similar to that found in Part 68 is feasible at this time with respect to navigation devices,[67] as some commenters suggest.[68] As a number of commenters note, the telephone networks do not provide a proper analogy to the issues in this proceeding due to the numerous differences in technology between Part 68 telephone networks and MVPD networks.[69] BSA suggests that the Commission adopt a voluntary registration system by which manufacturers are able

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[63]BSA Comments at 4; GI Comments at 72; SA Comments at 29; TW Comments at 62; Uniden Comments at 3.

[64]GI Comments at 73.

[65]*See* BSA Comments at 4.

[66]47 C.F.R. § 1.41. The *Carterfone* proceeding was initiated by a formal complaint challenging AT&T's prohibition against attaching the Carterfone to its facilities. *Carterfone*, 13 FCC 2d at 422. Commission rules allow any interested party to request Commission action. The request should contain the facts relied upon, the relief sought, and the statutory and/or regulatory provisions pursuant to which the request is filed and under which the relief is sought. Oppositions to the petition are to be filed within 10 days of the petition filing date. 47 C.F.R. §§ 1.41, 1.45.

[67]*See* 47 C.F.R. § 68.200.

[68]CEMA Comments at 18; Circuit City Comments at 6; ITI Comments at 15; Uniden Comments at 3.

[69]Zenith notes that the telephone is a point-to-point switched system connecting to a single user, whereas the typical cable system is point-to-multipoint broadcast system where the signal is everywhere in the system. Zenith Comments at 3. *See also* Ameritech Comments at 16; PrimeStar Reply at 10; TIA Comments at 11; SA Comments at 29.

to register equipment with the Commission by demonstrating that attaching the device to an MVPD system would not cause technical harm.[70] In view of the evolving industry standards in this area, which appears to have taken account of the various interests at stake, and which seek to convey a means to determine technical attributes of the network so that equipment may be manufactured without harming the network,[71] we are reluctant to impose a registration process seeking the same purpose at this time. Our decision in this regard is premised in part on the absence of concrete suggestions as to specific rules that the parties believe would be useful. If necessary, we will consider proposals as to procedures in this area that could be considered in the future. To the extent that multichannel video programming services are to be offered over facilities that are already subject to Part 68, we expect those rules to be applied or specific exemptions from them sought.

F. Security and Theft of Service

40. *Background.* The issue of unauthorized service reception is found in Section 629(b), which states that the Commission is not to prescribe regulations that "would jeopardize security of multichannel video programming and other services offered over multichannel video programming systems, or impede the legal rights of a provider of such services to prevent theft of service."[72]

41. In the *NPRM*, we stated that service theft is a serious matter, and requires that whatever action is taken to implement Section 629 must not conflict with the maintenance of system security nor inadvertently validate the manufacture and distribution of equipment intended for the unauthorized reception of communications services.[73] We sought comment on how to accomplish the objectives of Section 629 to assure commercial availability while ensuring the security of services not be jeopardized.

42. *Discussion.* No Commission action in this proceeding should be construed to authorize or justify any use, manufacture, or importation of equipment that would violate Section 633 of the Communications Act[74] or any other provision of law precluding the unauthorized reception of MVPD service. Similarly, nothing in this proceeding should be construed as diminishing an operator's ability to seek civil damages against parties involved with navigation devices providing unauthorized reception of services. The rules we adopt protect MVPDs by allowing them to disconnect service to subscribers using

[70]BSA Comments at 4.

[71]CableLabs is establishing a certification process to give suppliers an opportunity to have their products tested and credited with compliance by a certification board. CableLabs *ex parte* presentation (April 16, 1998).

[72]47 U.S.C. § 549(b).

[73]*NPRM,* 12 FCC Rcd at 5654.

[74]*See* 47 U.S.C. § 553 (The use of a converter-decoder to intercept or receive, or to assist in intercepting or receiving, cable programs without authorization from a cable system carries penalties of up to $1000 or imprisonment for up to six months. In addition, any person who employs such devices for commercial or private financial gain may be subject to a fine of $50,000 or two years imprisonment for a first offense. Greater penalties apply to subsequent offenses).

a navigation device which assists in the unauthorized reception of service.[75]

43. Commenters concur that piracy and theft of service are major problems for the cable industry.[76] Several cite an NCTA Office of Cable Signal Theft Study which concluded that the industry loses an estimated $5.1 billion in revenue annually (not including unauthorized reception of pay-per-view programming).[77] TW argues that piracy imposes costs on legitimate subscribers.[78] WCA contends that rampant theft of wireless cable service will occur following increased availability of wireless cable antennas and downconverters.[79] Noting that the Communications Act provides for severe punishment for service theft,[80] other commenters maintain that concerns over security should not be used to delay the development of a commercial market for all types of navigation devices.[81]

G. Signal Leakage

44. *Background.* The Commission's rules specify technical requirements for consumer electronic equipment to control radio interference. Part 15 addresses the radiation and conducted emissions limits (signal leakage) requirements for equipment that can be operated without an individual license, including cable set-top boxes.[82] Part 15 specifies an equipment authorization process to ensure that this equipment meets our technical requirements under that section.[83] Additionally, our current rules guard against harmful interference emanating from MVPD's as well as allow an operator to discontinue service to subscribers whose equipment when connected to the cable system will cause the cable system to exceed Part 76 signal leakage requirements.[84]

45. The *NPRM* tentatively concluded that existing Part 15 rules, which addresses concern over radio emissions from navigation devices available from service providers, will adequately cover the same

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[75]This rule is found at Section 76.1209.

[76]NCTA Comments at 24; SA Comments at 23; TW Comments at 8; US West Comments at 5.

[77]NCTA Comments at 24; TW Comments at 8; US West Comments at 5; Zenith Comments at 13. *But see* CE Reply at 8, contending that the $5 billion figure for cable loss has never been adequately documented.

[78]TW Comments at 8.

[79]WCA Reply at 11.

[80]CE Comments at 5; CEMA Comments at 17.

[81]CE Comments at 5; CEMA Comments at 17; ITI Comments at 25; Tandy Comments at 12; Viacom Comments at 13.

[82]47 C.F.R. § 15.1

[83]Devices operating under Part 15 generally must meet limits on radiated and power line emissions. *See* 47 C.F.R. §§ 15.109-111.

[84]47 C.F.R. §§ 76.613 and 76.617. *See* 47 C.F.R. §§ 76.605, 76.610-76.616.

concerns regarding navigation devices obtained from other sources.[85] We sought comment on this conclusion, with respect to attachments to cable systems and to other MVPDs, and on whether any changes in these rules are needed to address the expanded availability of such equipment.

46. *Discussion.* Commenters generally agree that the Part 15 provisions adequately address signal leakage issues that may arise with navigation devices.[86] We note, however, that the equipment authorization requirements for cable system terminal devices and other television interface devices have changed since the release of the *NPRM.*[87] We do not believe the change will affect our signal leakage requirements. GI's recommends that the Commission adopt Society of Cable Telecommunications Engineers ("SCTE") specifications for coaxial cable to prevent signal leakage from inadequately shielded cable.[88] We decline the recommendation to do so at this time. Our rules already permit cable operators to require that home wiring meets reasonable technical specifications.[89] Further, we believe that our current Part 15 provisions, which include limitations on signal leakage from electronic equipment and also specifies equipment authorization procedures applicable to equipment,[90] when combined with our Part 76 signal leakage requirements provide sufficient safeguards for signal leakage and interference concerns for retail navigation devices.

H. Rules for Equipment Providing Conditional Access

47. *Background.* As a matter of historical development, one of the principal functions of one class of the navigation devices that are the subject of Section 629, the set-top box, or converter box, has been the control of access to services so that only those who are authorized to receive service -- who have paid for the service -- can access it. Commenters in this proceeding have made reference to the existence of as many as seventeen basic analog scrambling methods.[91] As was described in the *NPRM,*[92] many of the

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[85]*See* 47 C.F.R. § 15.101(a).

[86]Circuit City Comments at 23; CE Comments at 7; GI Comments at 74; SA Comments at 29; TIA Comments at 12; Uniden Comments at 4. Additionally, NCTA, GI and TW requested that Part 15 rules be strengthened to guard against cable piracy. We decline the request since it is beyond the scope of this proceeding.

[87]*See Amendment of Parts 2, 15, 18 and Other Parts of the Commission's Rules to Simplify and Streamline the Equipment Authorization Process for Radio Frequency Equipment,* ET Docket No. 97-94, *Report and Order,* FCC 98-58, 1998 WL 174904 at ¶ 15 (rel. Apr. 16, 1998) ("*Equipment Authorization Order*"). While technical standards for such equipment remain the same, the authorization is now accomplished by self-approval procedures.

[88]GI Comments at 74.

[89]47 C.F.R. § 76.806. In another proceeding, we have sought comment on whether to apply this rule to all MVPDs. *Telecommunications Services Inside Wiring,* CS Docket 95-184, *Report and Order and Second Further Notice of Proposed Rulemaking,* 13 FCC Rcd 3659 (1997).

[90]The equipment authorization procedures are set forth in 47 C.F.R. Part 2.

[91]Scientific-Atlanta Comments at 12, n. 5. *But see* Commercial Engineering Reply Comments at 6-7.

[92]*NPRM,* 12 FCC Rcd at 5652.

techniques that are used to accomplish this access control are relatively unsophisticated, involving, for example, suppressing the synchronous pulse of the television signal and inversion or transposition of various parts of the video picture information so that the picture is unstable or distorted when viewed on a standard television receiver. To unscramble the signal, the descrambler box must contain the electronic circuitry to reverse the alteration of the signal.[93] It is this descrambling circuitry that is most prone to attack by those who would obtain service without paying for it.[94] Such techniques can be relatively easily defeated by subscribers if the necessary equipment can be purchased. If decoders were readily available for purchase, many existing, particularly analog, security systems would become completely ineffective. The advent of digital technology provides additional techniques that are more difficult to defeat, but a number of digital systems have also been compromised. The equipment which enables the consumer to access the service, and protects the distributor from theft of service, is generally referred to as "conditional access" equipment.

48. Recognizing the critical importance of the security function performed by navigation devices, Section 629 does not permit the Commission to prescribe regulations that:

> would jeopardize security of multichannel video programming and other services offered over multichannel video programming systems, or impede the legal rights of a provider of such services to prevent theft of service.[95]

The problem is to determine how to achieve commercial availability without at the same time compromising the security protection priority provided for in the law. The *NPRM* suggested that a potential solution to the problem would be to require MVPDs desiring to retain control over the security equipment to provide it to consumers separated or unbundled from those portions of the devices performing non-security functions.[96]

49. *Discussion.* In general, we find that it would be most consistent with our obligations under Section 629 to require that, by July 1, 2000, a security element separated from navigation devices be available from MVPDs so that equipment may be commercially available from unaffiliated manufacturers, retailers, and other vendors. Our rule permits MVPDs to continue to provide equipment on an integrated basis until January 1, 2005, so long as modular security components are also made available. The record responding to the *NPRM* reflects strong advocacy that separating the security function will enhance portability of equipment generally.[97] This requirement will facilitate the development and commercial availability of navigation devices by permitting a larger measure of portability among them, increasing the market base and facilitating volume production and hence lower costs. We think it significant that

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[93] *NPRM*, 12 FCC Rcd at 5653.

[94] *Id.*

[95] 47 U.S.C. § 549(b).

[96] *NPRM*, 12 FCC Rcd at 5655.

[97] *See e.g.*, Circuit City *ex parte* presentation (June 5, 1998); CEMA *ex parte* presentation (June 4, 1998); Tandy Comments at 13.

the separation of security elements has been recognized, most prominently by cable operators, as empowering new functionality and services.[98] The separation requirement is consistent with the intention of the statute, as underscored by the Conference Report, which states that "[o]ne purpose of this section is to help ensure that consumers are not forced to purchase or lease a specific, proprietary converter box, interactive device, or other equipment from the cable systems or network operator."[99]

50. Many commenters oppose the unbundling of security functions, citing security concerns,[100] and the advantages of providing navigation devices that integrate security and other functions.[101] Other commenters advocate separating security from non-security functions.[102] These commenters note that separation of security and non-security functions allows the MVPD to be the sole party responsible for security of the system.[103] TW notes that the advantage of such a modular security system is that the entire security module can be replaced by the MVPD in the event of a security breach.[104] CEMA argues that there is no technical reason why security and non-security functions of navigation devices cannot be decoupled nor any need for the security circuitry to be integrated with the tuner capabilities.[105]

51. In the analog environment, industry efforts have been in progress for some time, in connection with the *Equipment Compatibility Proceeding*, ET Docket No. 93-7,[106] looking toward the possibility of a defined "decoder interface" that would permit the access control functions of set top boxes to be segregated from the rest of the functions and attached directly to the back of television receivers or to other devices such as video tape recorders. In the *NPRM*, we sought comment on the possible use of the ET Docket No. 93-7 "decoder interface" as a standard means of segregating access control from other functions of navigation devices.[107] We sought comment on our authority to require use of the decoder interface standard in light of the 1996 Act's amendments to Section 624A ("Consumer Electronics Equipment Compatibility") of the Communications Act. Further, we sought comment on the relationship

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[98]NCTA *ex parte* presentation (June 4, 1998).

[99]S. Conf. Rep. 104-230, 104th Cong., 2nd Sess. at 181 (1996).

[100]NCTA Comments at 28; DIRECTV Reply at 17.

[101]NCTA Reply at 19; TW Comments at 30.

[102]BANX Comments at 3; CEMA Reply at 5; TW Comments at 11; Viacom Comments at 7; MSTV and NAB *ex parte* presentation (May 20, 1998).

[103]BANX Comments at 3; TW Comments at 11; Viacom Comments at 16.

[104]TW Comments at 13.

[105]CEMA Comments at 18.

[106]*See, e.g., Implementation of Section 17 of the Cable Television Consumer and Protection Act of 1992, Memorandum Opinion and Order*, ET Docket 93-7, 11 FCC Rcd 4121 (1996); *First Report and Order*, ET Docket No. 93-7, 9 FCC Rcd 1981 (1994) ("*Equipment Compatibility Proceeding*").

[107]*NPRM*, 12 FCC Rcd at 5657.

between these two provisions and how this relationship affects any proposal that seeks to separate security from other navigation device functions.

52. Although intended for a somewhat different purpose, the interface adopted in conjunction with the *Equipment Compatibility Proceeding* is now complete. According to a joint letter of March 26, 1998, from the National Cable Television Association and the Consumer Electronics Manufacturers Association, EIA-105 (including both EIA-105.1 and EIA 105.2), which is the decoder interface standard, has been formally approved as an Electronics Industry Association standard.[108] The Electronics Industry Association is an American National Standards Institute ("ANSI") accredited standards organization. The completion of this work appears to demonstrate the belief of the industry groups involved that it is possible to segregate analog conditional access from other functions. Alternative standards more specifically applicable to separating out conditional access functions for equipment processing digital signals are under consideration, including in particular the efforts being undertaken by the National Renewable Security Standards ("NRSS") Committee of the EIA in connection with draft standard EIA-679 and by CableLabs as part of the OpenCable project.[109]

53. There is considerable discussion in the record of this proceeding regarding both the proposed EIA-105 standard and the NRSS standards under discussion. Consistent with the Congressional directive,[110] throughout this proceeding, we have consulted with industry organizations involved in the standards setting processes.[111] Much of the discussion relating to EIA-105 is related to the question of whether the Commission is precluded from making any use of this standard by virtue of amendments to the equipment compatibility provision of Section 624A of the Communications Act. Section 624A was intended to provide for compatibility between the facilities provided by cable system operators and the advanced features of television receivers and video cassette recorders and to promote commercial availability from retail vendors not affiliated with cable systems, of compatible converter boxes and remote control devices.[112] Section 310(f) of the 1996 Act added new text to the existing Section 624A of the Communications Act, which states that the Commission must seek "to ensure that any standards or regulations developed . . . do not affect features, functions, protocols, and other product and service options . . . ."[113] The Congressional finding in Section 624A states that:

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[108] *See* Letter from Andy Scott, Director of Engineering, NCTA and George Hanover, Engineering Vice President, CEMA to Alan Stillwell, Economics Advisor, Office of Engineering and Technology, FCC (March 26, 1998) (*ex parte* filing in ET Docket 93-7).

[109] National Renewable Security Standard (NRSS), DRAFT EIA-679 Project PN-3639 (Jan. 1998).

[110] *See* 47 U.S.C. § 549(a) ("The Commission shall, in consultation with appropriate industry standard-setting organizations, adopt regulations . . .").

[111] *See e.g.*, Cablelabs *ex parte* presentation (Apr. 16, 1998); CEMA *ex parte* presentation (May 18, 1998). We have consulted with what we consider the appropriate industry standard setting organizations given the stage of development of the standards.

[112] 47 U.S.C. §§ 544a(a), 544a(b)(1).

[113] 47 U.S.C. § 544a(c)(2)(D).

> compatibility among televisions, video cassette recorders, and cable systems can be assured with narrow technical standards that mandate a minimum degree of common design and operation, leaving all features, functions, protocols, and other product and service options for selection through open competition in the market.[114]

The amended language of Section 624A by its terms applies only to rules prescribed by the Commission under Section 624A.[115] These amendments to Section 624A were intended to restrict the Commission's standard setting authority and to respond directly to issues associated with the "decoder interface standard" that is the subject of the Commission's *Equipment Compatibility Proceeding.*

54. The decoder interface standard that has been the subject of industry discussions in the *Equipment Compatibility Proceeding* would separate security from other functions performed by cable television set-top boxes in the manner suggested by many commenters in this proceeding.[116] The issue thus arises as to the scope of the Commission's authority to establish interface standards that govern the separation of access control from other CPE features in this proceeding. The text of the 1996 Amendments to Section 624A would appear, if applicable to Section 629, to direct the Commission to set only minimal standards in implementing Section 629 in both the analog and digital environments. However, the House Report states that the amendments to Section 624A were "not intended to restrict the Commission's authority to promote the competitive availability of converter boxes, interactive communications devices, and other customer premises equipment as required by [Section 629]."[117]

55. CERC believes that the amendment only clarifies the Commission's implementation of Section 624A in the Equipment Compatibility Proceeding, and should not be applied to the adoption of requirements beyond the scope of that section. CERC argues that in no way did Congress intend for the amendment to restrict the Commission's authority in implementing Section 629.[118] Additionally, CERC argues that the Commission has full authority to use any available tool in this proceeding for the purpose of complying with Section 629.[119] Viacom contends that the three amendments to Section 624A govern the narrow issue of compatibility between cable systems and consumer electronics equipment and have no applicability to the Commission's implementation of Section 629.[120]

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[114]47 U.S.C. § 544a(a)(4).

[115]47 U.S.C. §§ 544a(c)(1), (2).

[116]CERC Comments at 22; Circuit City Comments at 33.

[117]H. R. Rep. No. 104-204, 104th Cong., 1st Sess. 111 (1995). The Conference Report does not address this issue.

[118]CERC Reply at 47.

[119]CERC Comments at 22.

[120]Viacom Comments at 16.

56. Several commenters strongly urge the Commission not to use the decoder interface in this proceeding. Echelon argues that the decoder interface improperly affects home automation communications, provides the TV with an anti-competitive gateway status in the home, discriminates against computer video systems, and requires a new and incompatible physical interface necessitating the replacement of all current TVs and VCRs.[121] Ameritech contends that the decoder interface restricts differentiation by requiring disclosure of all functions other than those required for signal security.[122] CHTC disputes whether the interface is needed to ensure commercial availability in light of market developments such as third-party licensing of descrambling technologies by set-top box manufactures and new approaches to analog signal security that descramble without set-top boxes which make the decoder interface obsolete.[123] SA argues that there is no demand for the interface, particularly among cable operators.[124] Additionally, Americast and CHTC believe simpler, cheaper and far better alternatives already exist for separating security from non-security functions of navigation devices such as a PC card or a smart card.[125] NCTA contends that the equipment compatibility proceeding may provide some useful principles to help draw limits between security and non-security functions of CPE, but it was not intended to address the issues raised by Section 629, and will not necessarily provide a solution.[126]

57. Commenters also argue that prescribing the decoder interface would both exceed Commission's 629 authority and violate the Section 624A amendments,[127] and that adoption would lead to a dispute regarding the Commission's standard setting authority.[128] Echelon contends that the Commission cannot adopt the decoder interface standard as a navigation device standard when Section 624A specifically prohibits this standard for cable compatibility.[129] Echelon explains that the decoder interface incorporates CEBus communications protocol, a home automation standard completely unrelated to the specific equipment compatibility problems, which causes the decoder interface not to be a narrow technical standard because it affects competition in the home automation and computer markets.[130] Motorola contends that adopting the decoder interface would violate the amendments to Section 624A.[131]

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[121]Echelon Comments at 40.

[122]Ameritech Comments at 17.

[123]CHTC Comments at 10.

[124]SA Reply at 2.

[125]Americast Comments at 17; CHTC Comments at 10.

[126]NCTA Comments at 31.

[127]CHTC Comments at 18; Motorola Comments at 23; SA Comments at 26.

[128]CHTC Comments at 3; Motorola Comments at 23.

[129]Echelon Comments at 33.

[130]Echelon Comments at 55.

[131]Motorola Comments at 24.

Other commenters maintain that the language of Section 629 requires the Commission to work closely with industry standards organizations. They further contend that the decoder interface standard is not the product of a voluntary industry standard setting process, and argue that the Commission is not authorized to adopt it as a standard over the objections of private industry groups.[132] CHTC contends that the decoder interface was developed as a closed, joint product of NCTA and CEMA, and that the C3AG ad hoc unaccredited committee is not the appropriate standards setting organization with which the Commission should consult.[133]

58. A similar divergence of opinion is reflected in the comments with respect to "smart card" or NRSS standards as a mechanism for segregating conditional access from other navigation device functions in the digital context. Viacom advocates a smart-card-based conditional access system that requires the insertion of a credit-card like card into a module of the set-top box, which unlike the box itself, would not be sold at retail and its distribution would be controlled and inventoried by each MVPD for its own customer. Viacom envisions that the smart card, carrying the proprietary encryption of the MVPD, would interface with the otherwise commercially available set-top box, which contains a common scrambling algorithm. This dual-module box will be universal, such that it can be used by the subscriber to any MVPD service.[134] Viacom further notes that to connect this security device to the box's hardware will require a standardized connection and recommends the decoder interface connector.

59. Other commenting parties urge that it is important to maintain an integration of conditional access with other functions. They maintain that there may be significant piracy problems and other difficulties associated with smart card technology.[135] DIRECTV argues that it would be impossible for security breaches to be prevented solely through smart cards.[136] SA notes that smart cards or similar devices ignore the important principle of preventing piracy and theft; that at higher levels of hardware integration, security becomes harder to compromise.[137] DIRECTV notes that dividing the security function from the other functions of a navigation device prevents the hardware unification and system-level integration that allow for reductions in the complexity and manufacturing costs of set-top boxes.[138] NCTA points to the prohibitive recurring cost of replacing a smart card if the security system is breached.[139]

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[132]CHTC Comments at 13; Echelon Comments at 44 ; Motorola Comments at 24; SA Comments at 3.

[133]CHTC Comments at 10. *But see* CERC Comments at 22 (the decoder interface standard is a balloted and accepted standard).

[134]Viacom Comments at 8.

[135]DIRECTV Comments at 18; GI Comments at 59; NCTA Comments at 25; SA Comments at 25; TCI Reply at 12.

[136]DIRECTV Comments at 18.

[137]SA Comments at 25.

[138]DIRECTV Comments at 18.

[139]NCTA Comments at 25.

Additionally, DIRECTV explains that security in digital broadcasts cannot be contained entirely in a smart card provided separately from the navigation devices, noting that for control mechanisms in its system to operate properly requires some interaction between its security module and the receiver into which it is inserted.[140] Motorola contends that the Act prevents removal of an operator's ability to control security in the manner best suited for its particular system or the type of conditional access method.[141] GI maintains that Section 629(b) prevents the Commission from requiring that any particular technology solutions be used by MVPDs to achieve commercial availability that includes security technology because any government-mandated solution could impair network security.[142] Participants in the direct broadcast satellite service, for example, vigorously object to any separation requirement. Other commenters note that certain smart card security systems that have been widely used in Europe have been compromised.[143] The Commission itself has studied security failures in the C-Band satellite market and noted the importance of security for a market to develop.[144]

60. SBCA believes that bundling is a vital element of system security, as demonstrated by the successful curtailing of piracy in larger home satellite dishes. SBCA contends that the more control a satellite service provider has over the physical distribution of its video signal directly to a subscriber's television set, the greater is the provider's ability to avert, or rectify if need be, compromise of the signal in distribution.[145] TIA notes that integration allows manufacturers to take advantage of current and future advances in semiconductor and integrated circuit technology.[146]

61. The record with respect to equipment used with cable services convinces us that the separation of security will significantly enhance the commercial availability of the equipment. Separated security will allow individual cable operators to design and operate equipment reflecting their particular security needs, a circumstance providing broad discretion for each cable operator, while still facilitating portability and the development of the consumer equipment market. Any significant disparity among cable operators, however, undermines the commercial availability of equipment. Subscribers are more likely to purchase, and not lease from a provider, if they can use the navigation device when they move to an area served by a different operator. This will be more difficult if varying security elements are embedded in the equipment made available for retail. Geographic portability will enhance the commercial availability of navigation devices and, should result in wider choice and lower prices to consumers. The separation of

[140]DIRECTV Comments at 18.

[141]Motorola Comments at 28.

[142]GI Comments at 58.

[143]*See* TW Comments at Appendix A.

[144]*Inquiry into the Need for a Universal Standard for Satellite Cable Programming, Report*, GEN Docket No. 89-78, 5 FCC Rcd 2710 (1990).

[145]SBCA Comments at 10.

[146]TIA Comments at 17.