

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)	
)	
Compatibility Between Cable Systems and Consumer Electronics Equipment)	PP Docket No. 00-67
)	

COMMENTS OF TIVO INC.

TiVo Inc. (“TiVo”) submits these comments in response to the Federal Communications Commission’s (the “FCC’s” or “Commission’s”) Further Notice of Proposed Rulemaking in the captioned matter.¹ TiVo offers a personalized television service that allows television viewers to take advantage of the incredible convenience of digital technology to customize their viewing experience using advanced searching and storing mechanisms. The TiVo service operates on a secure digital video recorder (“DVR”) platform which digitally records television programming onto a hard-disk, enabling the viewer, among other things, to watch his desired programming on a time-shifted basis. The TiVo DVR platform is designed to allow consumers to flexibly use copyrighted content in the home environment while restricting content from exiting the home environment in violation of copyright laws. The DVR hardware component that

¹ *In the Matter of Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices, and Compatibility Between Cable Systems and Consumer Electronics Equipment*, CS Docket No. 97-80 and PP Docket No. 00-67, Further Notice of Proposed Rulemaking, FCC 03-3, rel. Jan. 10, 2003 (“FNPR”).

enables the TiVo service is sold either as an integrated component of a set-top box or as a stand-alone device which works with any multichannel video distribution system.²

I. SUMMARY

TiVo views the plug and play initiative as a potentially very significant step towards offering consumers additional choices with respect to cable television. However, the MOU contains some critical flaws. Congress has expressed a strong desire for consumers to experience the benefits of competition in the navigation device market. Yet, the MOU does not do nearly enough to encourage small innovative companies like TiVo to innovate in this area by being able to build and sell competitive navigation devices to consumers. The MOU contains anti-consumer encoding rules and hobbles competitive CE Manufacturers with restrictions on functionality with the resulting effect that TiVo is unconvinced that “plug and play” compliant navigation devices would be competitive with existing integrated set-top boxes in the marketplace.

It is absolutely critical that the Commission ensure that the appropriate regulatory environment exists to provide new, innovative companies the incentive to create competitive navigation devices. This can only happen if new, innovative companies have assurance that if they create devices, those devices technically will function on the cable platform at least as good as set-top box devices provided to consumers by MSOs. This environment is unlikely to develop as long as MSOs are permitted to introduce new integrated set-top boxes into the market.

² For more information on TiVo see www.tivo.com.

TiVo urges the Commission to adopt the plug and play MOU as clarified and modified herein and not to allow this proceeding to be used as an excuse to undermine or otherwise delay the January 1, 2005 mandate prohibiting MSOs from introducing new integrated set-top boxes into the market.

II. DISCUSSION

A. The Commission Should Encourage Innovation And Competition From Small, Entrepreneurial Companies

It would be difficult to dispute that digital video recorders are having a profound impact on the multichannel video programming industry. Countless articles have been written about how DVRs will fundamentally change the way consumers watch television programming and the resultant effects on programming distributors, advertisers, and content creators. Indeed, anyone who owns a DVR knows that the change from “appointment-based television” to essentially “television-on-your-schedule” is among the most profound changes to television viewing since the introduction of cable television, and arguably more so.

DVRs were created and introduced to consumers by a very small and innovative “start-up” company; not by a large cable television operator; not by a large consumer electronics manufacturer; not by a traditional cable set top box manufacturer; and certainly not by a large content creator. The embrace of this technology by consumers convinced the satellite industry to incorporate DVR technology into their customer offerings. The deployment of DVR technology by the satellite industry, in turn, is forcing the cable industry to offer competitive offerings to consumers in much the same

way as the cable industry's deployment of cable modem service forced the Baby Bells to deploy DSL service. Cable operators are now deploying DVR set top devices as well as offering Video On Demand services in certain markets. This type of competition is healthy and ultimately benefits both multichannel video programming distributors ("MVPDs") and consumers alike. However, it may not have happened for years, if at all, if it wasn't for TiVo and other small, entrepreneurial companies. In considering a "plug and play" standard, therefore, it is important for the Commission to ensure that there is room for small, "non-traditional" entities like TiVo to continue to innovate in this area.

TiVo views the plug and play initiative as a potentially very significant step towards offering consumers additional choices with respect to cable television. However, what seems to be the "right" approach today may not seem so right tomorrow. While plug and play is primarily designed to resolve concerns regarding digital television receivers with integrated set-top functionality, TiVo urges the Commission to keep in mind that consumers may be more interested in purchasing devices that interface between the cable plant and their digital television receiver. Only time will tell but, to date, consumers have been reluctant to replace their television sets very often, whereas they have been far less reluctant to purchase a device that works with their television set – particularly if that device plugs into the cable network without requiring a set top box provided by the cable operator. Accordingly, TiVo would like the Commission to expressly confirm that the Memorandum of Understanding Among Cable MSOs and Consumer Electronics Manufacturers dated December 12, 2002 ("MOU") enables companies like TiVo to build navigation devices that consumers can directly attach to

their DTV receivers and their cable systems and receive cable television services without the need for a set top box provided by the cable operator.³

B. Unidirectional Devices Should Be Permitted To Use Cable Modems

The MOU states in Section 3.4.7 that the “Unidirectional” products contemplated by the agreement do not use the cable system return path. The DFAST technology agreement also includes this restriction. Innovative devices like the TiVo set-top are Internet-enabled, and may be able to provide enhanced functionality through access to Internet-based services using a cable modem. TiVo would like the Commission to affirm that such access is acceptable and permitted by any rules adopted by the FCC in this proceeding.

C. CE Manufacturers Should Not Be Required To Use 1394 Interfaces

Similarly, TiVo would like the Commission to confirm that the requirement that MSOs deploy HD set-top-boxes that include a functional IEEE 1394 interface does not apply to CE Manufacturers.⁴ TiVo expects navigation devices to be networked within the home and believes that networked systems should not be burdened with costly equipment requirements. For example, TiVo has chosen to rely on the USB (the Universal Serial Bus) specification and interface for secure home networking.⁶ USB has been standard on

³ This would appear to be the intent of the MOU but the agreement is not completely clear on this important point. *See, e.g., MOU* at Section 1.4 (“Unidirectional Digital Cable Products may be televisions, set-top-boxes, recording devices, and other devices without limitation.”) There should be no ambiguity on this important point.

⁴ This would seem to be implied from Section 3.6.2.1 of the MOU but is not entirely clear.

⁶ TiVo is a strong proponent of securing content from being redistributed outside of the consumers’ home. TiVo has developed and deployed its security system based on a “trusted authority” architecture using public key/private key encryption and a hardware-based secure microcontroller used for identification and authentication. It enables the secure transfer of digital content among devices in the home. Each device is registered with TiVo so TiVo can authorize which devices are authorized to transfer

all PC configurations for many years, is easily implemented using inexpensive components, and has a great deal of supporting software available. Using extremely inexpensive USB “dongles”, standard-networking technologies such as Ethernet or IEEE 802.11b are easily connected to a set-top. The Commission should not mandate what particular interfaces CE Manufacturers must use for home networking functionality. Companies should be free to innovate and to use their choice of interface as long as the content is kept secure from redistribution outside of the home.⁷

Further, the MOU and DFAST agreements fail to contemplate the use of home networking to make content available for personal use throughout the home, except within the scope of a “digital output” of set-top device. The ability to record a paid-for program on one device, and access it through another securely within the home, should be explicitly protected in the rulemaking.

D. The FCC Should Encourage Dual Tuner Functionality Competition

Cable set-top-box vendors currently are providing cable operators with dual tuner set-top-boxes. To effectively compete in the market against dual tuner integrated set-top-boxes, CE Manufacturers should be allowed to deploy devices with dual point of

digital content. Encrypted digital certificates are sent from TiVo to each authorized device in the household. TiVo sends each authorized device the appropriate Public Keys for the other authorized devices and is “signed” by TiVo. Only authorized devices can request transfers. When device B requests a transfer from device A, device A and B do a secure “key exchange” based on each others’ public keys. They then use these “session keys” to in turn encrypt the content keys, which themselves are unique to the device A and change several times within each piece of content. This ensures that the content can be opened only by device B. The digital certificates expire after a set period of time so TiVo can maintain control over which devices are authorized to transfer digital content.

⁷ Section 3.6.3 suggests that approval by CE Manufacturers, MSOs, and the FCC would be required for CE Manufacturers to utilize “future secure digital interfaces.” The Commission should not permit the use of secure digital interfaces to be subject to approvals. Rather, if the system employing the digital interface is secure, then the CE Manufacturer should be allowed to use it.

deployment (“POD”) interfaces and MSOs should have to supply the consumer with the appropriate number of PODs to activate dual tuner functionality, with no economic disadvantage versus MSO supplied set-tops.⁸ In addition, TiVo would like the Commission to require that, when a definition for a dual tuner POD is available, the MOU would permit its use by CE Manufacturers. CE Manufacturers should not be limited to a single stream POD interface as that would inhibit competition between CE Manufacturers and the duopoly of cable set-top box manufacturers who have impeded competition in this area. CE Manufacturers will already be at enough of a competitive disadvantage versus integrated box vendors due to the fact that their products will be unidirectional.

E. The POD Output Should Emit Standardized MPEG

The current MOU has a further weakness in that it does not completely standardize the output of a POD. This provides for potential abuse by MSOs and existing network and equipment providers by allowing for MPEG stream incompatibilities that would impact the operation of a set-top and discourage third-party set-top suppliers. To encourage competition, the Commission should require that the POD interface emit standardized MPEG streams and no other proprietary or unspecified information.

F. The Encoding Rules Are Anti-Consumer And Should Not Be Enacted

The MOU is contingent on the enactment of encoding rules and elimination of selectable output controls for all MVPDs even though the satellite distributors were not a

⁸ Non-integrated set-top boxes presently require two PODs for dual tuner functionality because each POD decrypts only one television signal stream.

party to the agreement. The Commission should not permit such dependency.⁹ There's a big difference between using technology to secure content from being redistributed outside of the home ("copy protection") – either over unsecured networks or by making unlimited permanent and portable digital copies – and inhibiting consumers from exercising their "fair use" rights to time-shift content within their home ("copy control"). Copy protection is an important component of a navigation device. Copy control rules, however, are not. Copy control rules are not relevant to fostering compatibility between cable systems and consumer electronics equipment. Instead, copy control rules would stifle innovation and harm competition among manufacturers. There is absolutely no need to condition the availability of new navigation devices on copy control rules.

Moreover, these particular encoding rules are incomplete and anti-consumer. They would unnecessarily restrict consumer's rights to the detriment of the public interest. In particular, the "Copy Never" encoding would restrict a DVR owner's use of paid-for programming to a 90-minute window. A DVR is not a "recording device" in the classical sense, since it does not allow physical removal and transport of the content. Instead, it is a device that enables a consumer to "cache" or time-shift content that he paid to receive so that the content can be viewed at his convenience. Imposition of a 90-minute window of use is in fact quite inconvenient for consumers, apparently being only a vehicle for protecting a business model brought forward from an analog world. In fact, it is apparent that allowing complete time-shifting of paid-for content enhances its utility

⁹ In general, it is poor public policy for two industries to reach an agreement that binds a third industry that is not a party to the agreement. In this case, the MOU is intended to help cable operators better compete with satellite companies by enabling multiple companies to manufacture devices that plug into the cable network. Using the MOU to force the satellite industry to alter its practices should not be required.

for the consumer, and results in improved sales of one-time content. Use of “Copy Never” in this fashion would actually do more harm than good to the MVPD and content provider.

Copy protection and copyright issues should be negotiated by private agreements taking into account the rights of content owners and the “fair use” rights of consumers to ensure products and services that meet the legitimate expectations and desires of consumers. The application of encoding rules on a “per business model” basis seems particularly inappropriate. It has never been the province of the Commission to protect existing business models and the Commission shouldn’t start now. To create competition, new business models should be encouraged and not subject to a public hearing in which competitors can thwart innovative new offerings.

In any event, the balancing of rights of consumers to view television programming at their convenience and the rights of content holders to exercise control over their content attempted by the encoding rules contained in the MOU and DFAST license simply fail the public interest litmus test.

G. The End Of Integrated Set-Top Box Sales Should Not Be Delayed

The MOU should not be used to delay the January 1, 2005 mandate that bars MSOs from introducing new integrated set-top boxes into the market.¹⁰ This mandate stems from the desire of Congress to ensure that consumers have a choice of cable television navigation devices from manufacturers, retailers, and other vendors not

¹⁰ 47 C.F.R. Section 76.1204(a)(1).

affiliated with cable operators.¹¹ Congress 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.”¹² In adopting its navigation device rules, the Commission commented that its rules, 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.¹³

The first step was to require MSOs to make available by July 1, 2000 conditional access or security devices separated out from other functions of the navigation devices used with their distribution systems. These modular security components, or PODs, permit MSOs to retain conditional access functions under their own control while permitting other functions to be incorporated into devices available for retail purchase.¹⁴ The separation of security functions from the other functions required the development of an interface specification between host devices and PODs. The cable industry, through CableLabs, met this requirement in July 2000.

The next step was to prohibit MSOs from selling or leasing new integrated equipment after January 1, 2005. The Commission recognized that MSOs’ continued

¹¹ 47 U.S.C. Section 549. Section 629 was adopted as part of the Telecommunications Act of 1996. Pub. L. No. 104-104, 110 Stat 56 (1996) (“1996 Act”).

¹² H.R. Rep. No. 104-204, 104th Cong., 1st Sess. 112 (1995).

¹³ *In the Matter of Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices*, CS Docket No. 97-80, Report and Order, FCC 98-116 (rel. Jun. 24, 1998) (“Navigation Device Order”) para. 13.

¹⁴ 47 C.F.R. Section 76.1204(e).

ability to provide integrated equipment would interfere with the statutory mandate of commercial availability. That date was chosen to minimize the economic impact of the prohibition on manufacturers and MSOs by allowing them sufficient time to respond to equipment modifications and a changed market.¹⁵

So why aren't set-top boxes being sold in retail in 2003? Well, the Commission got it right in 2000 – the ability of MSOs to continue to provide integrated equipment is significantly hindering commercial availability of POD-enabled set-top boxes.

Although the PODs have been qualified, there has been no requirement for MSO cable systems to make their networks function with those PODs. A number of CE Manufacturers, including Pace, Panasonic and Zenith, built set-top boxes with slots for PODs. These set-top boxes never made it to retail shelves, however, because of the customer support issues that could be expected if a consumer purchased a set-top box and it didn't work properly because the MSO's plant was not interoperable with the set-top box.¹⁶ The customer support costs and reputation damage to a CE Manufacturer who sells a consumer a "cable-ready" set-top box that doesn't function properly with the consumer's cable system is more than enough to prevent CE Manufacturers from creating POD-enabled set-top boxes. In the MOU, we're just now seeing a concrete date for MSOs to have their headends ready to support products through the provisioning of

¹⁵ *In the Matter of Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices*, CS Docket No. 97-80, Further Notice of Proposed Rule Making and Declaratory Ruling, FCC 00-341 (rel. Sept. 18, 2000) ("FNPR") at para. 10.

¹⁶ These CE Manufacturers also and tried to sell these POD-enabled boxes to MSOs but were unsuccessful because those set-top boxes would have been more expensive for MSOs to deploy than an integrated box from Scientific-Atlanta or Motorola.

PODs.¹⁷ This deadline is critical. Until MSOs are required to provide their own customers with POD-enabled boxes, they have no incentive to ensure that POD-enabled boxes by any manufacturer will function properly.

Competition for retail set-top boxes will only occur when CE Manufacturers can build boxes with PODs that function with the cable plant. It appears that the only way to ensure that PODs function with the cable plant is to require that all new boxes have PODs. The Commission should not allow competition in the cable set-top box market to be forestalled beyond January 1, 2005.

III. CONCLUSION

TiVo views the plug and play initiative as a potentially very significant step towards offering consumers additional choices with respect to cable television. The public interest demands, however, that the Commission ensure that small, “non-traditional” entities like TiVo are provided with the opportunity to innovate in this area by being able to build and sell competitive “Unidirectional” navigation devices to consumers. The MOU hamstring competitive CE Manufacturers with restrictions on functionality with the resulting effect that, without changes to the MOU, TiVo is unconvinced that “plug and play” compliant navigation devices would be competitive with existing integrated set-top boxes in the marketplace.

The Commission should not adopt the encoding rules contained in the MOU or the DFAST license. These encoding rules are incomplete and anti-consumer. Protecting

¹⁷ *MOU* at Section 3.8.2.

content providers from having their works redistributed outside of the home (either via unsecured networks or through the creation of an unlimited number of permanent digital copies) is one thing (which TiVo fully supports), but the Commission should not restrict the “fair use” rights of consumers to time-shift content within the home. Such a decision would be completely anathema to the public interest in providing consumers with access to the incredible conveniences, flexibility, and innovation engendered by digital television technology.

Finally, this proceeding must not be used as a pretext to undermine or otherwise delay the January 1, 2005 mandate prohibiting MSOs from introducing new integrated set-top boxes into the market. Until MSO are required to provide their own customers with POD-enabled boxes, they have no incentive to ensure that POD-enabled boxes by any manufacturer will function properly. Only when CE Manufacturers are confident that the navigation devices that they build will function with the cable plant, will they make available to consumers navigation devices at retail. The Commission should not allow competition in the cable set-top box market to be forestalled beyond January 1, 2005.

Respectfully submitted,

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March 30, 2003