Testimony of

Mr. Richard R. Green

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Good afternoon. I am Dr. Richard Green, President & CEO of CableLabs. I appreciate the opportunity to testify before this Committee, with particular emphasis on the development of the retail market for cable set-top boxes. I also look forward to answering any technical questions you may have concerning the role of the cable industry in developing and deploying new technology.

I speak to you today as a scientist who has devoted a great deal of his professional career to questions involving the application of digital technology. The experience I gained during 4 years as Director of the CBS Advanced Television Technology Laboratory, 5 years as Senior Vice President of Operations and Engineering of PBS, and 14 years as CEO of CableLabs gives me a special appreciation for the technical perspectives of manufacturers, cable operators, and broadcasters.

CableLabs is a research and development consortium of cable television system operators serving North and South America. CableLabs conducts and funds research and development projects to help cable companies plan for the future and apply technology to meet consumers' needs. I know this hearing is focused on the pending merger between Comcast and AT&T Broadband, and I would be remiss if I did not note that both of those companies are important participants in the work of our laboratory. Brian Roberts has recently served as Chairman of the CableLabs Board of Directors.

CableLabs was incorporated under the Cooperative Research Act. The Act, which this committee played a key role in developing, encourages research and development among companies within industries like the cable industry. I believe that we have been able to realize the potential of that Act by, among other things, contributing to the development of a burgeoning broadband industry and helping spur the digital transition.

For example, over ten million American homes now enjoy high-speed Internet access connections and over seven million of those homes are served by cable high-speed data service. The cable modems used in those homes were developed at CableLabs. In the past, computer users knew that they could buy a modem that would work on any phone line. Cable industry leaders wanted their customers to be able to buy their own cable modem at retail and be confident that it would work on any cable system in North America. Through CableLabs' DOCSIS (Data over Cable Service Interface Specification) project, that goal has been achieved. Cable's broadband service is providing an important new and competitive, high-speed data highway into American homes.

A word about the CableLabs' cable modem or DOCSIS effort is instructive because it is a model for our OpenCable project which aims to address similar interoperability and retail availability issues for cable set-top boxes and digital television sets.

The cable industry recognized that to make cable modems broadly available and take advantage of the economies of scale to get the lowest possible price for consumers, it would be necessary for cable modems to use a common interface. Interoperability of DOCSIS cable modems was achieved through the cooperation of the cable industry, equipment manufacturers, retailers and

others working with the CableLabs DOCSIS project. With three years of careful development of the specification, relying upon input from CableLabs' member companies and the consumer electronics and software industries (including many who were not traditional suppliers for the cable industry), the DOCSIS modem specification became an international standard at the International Telecommunications Union. Then, CableLabs, again with input from its members and industry vendors, invited vendors to bring their equipment to CableLabs to test its interoperability with other vendors' DOCSIS modems. CableLabs developed a series of tests to measure conformance with the standard and, in so doing, insure product interoperability. We do this by "certifying" cable modem compliance with the DOCSIS standard.

The certification process gives retail purchasers confidence that a certified cable modem will interoperate with other DOCSIS products made by other manufacturers. As of today, a highly competitive environment has developed to the benefit of consumers as CableLabs has certified over 200 different modem models from dozens of vendors.

In a similar and parallel effort, CableLabs has worked hard to reduce the technical barriers to the delivery of digital and HDTV television and to encourage the commercial availability of cable set-top boxes and other equipment that works with cable systems. CableLabs' members, the leading companies in the cable industry, have been very clear in their instruction to us. These members supported the DOCSIS effort that successfully created a retail market in cable modems. They want the same thing to happen with cable set-top boxes and integrated DTVs.

The process of developing the digital set top box standards has proved immensely more complicated, as we have attempted to reconcile the often competing interests of hundreds of parties from outside our industry. But with a lot of give and take among the players, we've now done it.

I would like to give you a sense of how complex an undertaking this is, and of just how much progress has nevertheless been made.

First and perhaps foremost, it is important for you to understand that cable systems can deliver - and today are delivering - broadcasters' digital signals (including high definition signals) to DTV sets owned by cable customers. In short, there is no technical impediment to current generation DTVs working with cable. "High-definition" digital cable set-top boxes which allow cable operators to provide digital broadcast signals (including high definition signals) to consumers exist and are being deployed today. Therefore, in those areas where cable companies have reached agreements with broadcasters to carry their digital signals over the cable plant, there is no technical "compatibility" problem with the delivery of those signals. A number of cable companies including Comcast, AT&T, AOL Time Warner, Cox and Charter are currently providing such services or have announced plans to do so in the near future.

The cable industry has also worked with the consumer electronics industry to develop an "integrated" DTV set which would allow the cable set-top box to be incorporated within the DTV - so that no external cable set-top box is needed. To this end, the National Cable & Telecommunications Association (NCTA) and the Consumer Electronics Association (CEA)--representing all major manufacturers--reached voluntary agreements in February 2000, that will allow consumer digital television sets to be connected directly to digital cable systems. The features agreed to by CEA and NCTA for these types of DTV models are specifically spelled out in the agreement. The agreements detail the technical specifications that will enable these sets to work with cable systems. Those specifications, developed by CableLabs, were adopted as US standards in November 2001, although manufacturers could develop products based on the specifications even before the standards were adopted as some did.

In fact, these specifications have been available to manufacturers for over two years and some manufacturers have developed prototype integrated DTV receivers. One such device was on display at the January 2001 Consumer Electronics Show, connected to and working with the local Cox cable system in Las Vegas. In short, just as there is no technical barrier to a consumer receiving digital signals over the cable plant, there are no technical barriers for a manufacturer to build an "integrated DTV" model with the features described in the CEA-NCTA technical agreement.

In a related area, the FCC has implemented the provision in the Telecommunications Act of 1996 calling for the commercial availability of navigation devices such as set-top boxes. Consistent with the congressional direction that the security of the cable operator's signals not be jeopardized while fostering the commercial availability of set-tops and other devices, the FCC rules require that separable security modules for set-top boxes must be available from cable operators to support "integrated television receivers" as well as set-top boxes in the retail market. These removable "point-of-deployment" or "POD" security cards handle conditional access and encryption of premium cable channels. They foster the portability of digital set-top boxes and other POD-enabled devices since the devices may be sold nationwide and will work with POD modules supplied by various cable operators to accommodate their particular conditional access systems. Leading cable operators--including the two companies here today--have publicly affirmed that their systems will support set-top boxes and integrated DTV equipment built to these specifications, including integrated DTV sets contemplated by the February 2000 NCTA-CEA agreement.

CableLabs developed the removable security modules as part of its OpenCable project. The cable industry has invested millions of dollars to develop specifications and support for the "POD module" for one reason--to facilitate the retail availability of digital set-top boxes and integrated digital television receivers. The specifications needed to produce devices accommodating the separate security POD modules were also adopted as US standards last year, although they have been available since 1999. Moreover, to further promote retail sales of set-top boxes, in October 2001, the cable industry launched an initiative that provides customers with the option of purchasing from participating retailers the exact same set-top boxes they can lease from their cable operator.

In addition to the OpenCable hardware specifications mentioned above, the OpenCable project has recently published an open specification for middleware (software) - the OpenCable Application Platform ("OCAP") specification-- that will promote the retail availability of fully portable digital set-top boxes and integrated DTV sets that will support a wide range of applications. For example, OCAP will permit the downloading and execution of applications, such as program guides, to any OCAP-enabled devices by any cable system supporting OCAP. This will enhance the portability of set-top boxes and DTV sets which the OpenCable POD modules already foster. Because OCAP is based upon an existing European specification, tremendous economies of scale and scope can be achieved. Once again, Comcast, AT&T and other cable operators have committed that their systems will support CableLabs certified, OCAP enabled devices.

The CableLabs process is open, cooperative, and as efficient as possible. We work to keep equipment development time to a minimum. To fulfill this goal we modeled our OpenCable effort on our successful DOCSIS effort. As we did with DOCSIS, we work with equipment designers and manufacturers--over 500 companies in all--to cooperatively prepare and approve the specifications. Over the last three years, the OpenCable project has released specifications

which provide the details necessary to build set-top boxes and integrated DTV sets that will function seamlessly on cable systems.

We are convinced that by attracting additional manufacturers, competition will add features to, and reduce prices of, set-top boxes for consumers as well as cable operators. Our goals are to issue specifications that will unleash market forces to promote innovation and competitive offerings. (In fact, our License Agreements explicitly assure manufacturers that our specifications are not a ceiling on innovation, and invite them to add other features and functionalities.)

Finally, I would like to briefly mention that we are also pursuing a similar approach to remove technical barriers for the deployment of telephone services over cable networks. The PacketCable project at CableLabs has issued specifications, now worldwide standards, supporting telephone services using advanced voice over the Internet technologies. Thus, in the near future, we believe consumers will benefit greatly from lower cost equipment and competitive telephone services delivered over cable networks in an even wider fashion than currently is the case.

In closing, CableLabs has been working to remove technical barriers inhibiting the deployment of innovative new services over cable systems. Through the efforts I described above, we are assisting the cable industry in developing a new wave of innovative products that we hope will keep cable services attractive to consumers in an increasingly competitive environment. I hope that this has helped to clarify some issues of interest to the Committee. Thank you again for this opportunity to testify this afternoon. I'd be pleased to answer the Committee's questions.