Advanced Television Systems and their Impact upon the Existing Television Broadcast Service: Fourth Report and Order

FCC 96-493 (Dec. 27, 1996)

I. Introduction

1. In this, the Fourth Report and Order in our digital television (“DTV”) proceeding, we adopt a standard for the transmission of digital television. This standard is a modification of the ATSC DTV Standard proposed in the Fifth Further Notice of Proposed Rule Making and is consistent with a consensus agreement voluntarily developed by a broad cross-section of parties, including the broadcasting, consumer equipment manufacturing and computer industries. As explained below, the Standard we adopt does not include requirements with respect to scanning formats, aspect ratios, and lines of resolution. For clarity, we will refer to this modified standard as the “DTV Standard.”

II. Background

4. This proceeding began in 1987, when we issued our first inquiry into the potential for advanced television (“ATV”) services. In the fall of 1987, a few months after initiating this rulemaking proceeding, we established the Advisory Committee on Advanced Television Service (“Advisory Committee” or “ACATS”) to provide recommendations concerning technical, economic and public policy issues associated with the introduction of ATV service. Early in the process we decided that no additional spectrum would be allocated for television broadcasting, but that existing broadcasters should be permitted to upgrade their transmission technology so long as the public remains served throughout any transition period. We later decided “that an ATV system that transmits the increased information of an ATV signal in a separate 6 MHz channel independent from an existing NTSC channel will allow for ATV introduction in the most non-disruptive and efficient manner.” As the proceeding progressed, all-digital advanced television systems were developed and we began to refer to advanced television as digital television (“DTV”) in recognition that, with the development of the technology, it was decided any ATV system was certain to be digital. In February of 1993, the Advisory Committee reported that a digital HDTV system was achievable, but that all four competing digital systems then under consideration would benefit significantly from further development and none would be recommended over the others at that time. In May of 1993, seven companies and institutions that had been proponents of the four tested digital ATV systems, joined together in a “Grand Alliance” to develop a final digital ATV system for the standard. Over the next two-and-a-half years, that system was developed, extensively tested, and is documented in the ATSC DTV Standard. On November 28, 1995, the Advisory Committee voted to recommend the Commission’s adoption of the ATSC DTV Standard.

5. The system described by the ATSC DTV Standard is generally recognized to represent a significant technological breakthrough. It includes discrete subsystem descriptions, or “layers,” for video source coding and compression, audio source coding and compression, service multiplex and transport, and RF/transmission. In addition to being able to broadcast one, and under some circumstances two, high definition television (“HDTV”) programs, the Standard allows for multiple streams, or “multicasting,” of Standard Definition Television (“SDTV”) programming at a visual quality better than the current analog signal. Utilizing this Standard, broadcasters can transmit
three, four, five, or more such program streams simultaneously. The Standard allows for the broadcast of literally dozens of CD-quality audio signals. It permits the rapid delivery of large amounts of data; an entire edition of the local daily newspaper could be sent, for example, in less than two seconds. Other material, whether it be telephone directories, sports information, stock market updates, information requested concerning certain products featured in commercials, computer software distribution, interactive education materials, or virtually any other type of information access can also be provided. It allows broadcasters to send, video, voice and data simultaneously and to provide a range of services dynamically, switching easily and quickly from one type of service to another. For example, a broadcaster could transmit a news program consisting of four separate, simultaneous SDTV program streams for local news, national news, weather and sports; then transmit an HDTV commercial with embedded data about the product; then transmit a motion picture in an HDTV format simultaneously with unrelated data. As stated by the HDTV Grand Alliance:

The ATSC DTV Standard based on the Grand Alliance system represents by far the world’s best digital broadcast television system, with unmatched flexibility and unprecedented ability to incorporate future improvements. Implementing this technology will dramatically increase the technical quality of broadcast television, helping to preserve for consumers and for our democratic society the benefits of a vibrant and healthy free over-the-air television service in the future. In addition, deploying this technology will give consumers access to a host of potential information services that can help meet pressing needs in health care, education and other areas....

*** 7. *** On November 25, 1996, representatives of a broad cross section of the broadcast, computer and receiver manufacturing industries reached an agreement (“the Agreement”) and, the following day, submitted it to the Commission. The Agreement stated that the FCC should adopt the voluntary ATSC DTV Standard ***. On November 27, 1996, the Commission released a Public Notice soliciting comment on the Agreement. Comments were filed December 6, 1996.

III. Comments

8. Technical Standards for DTV. *** There is widespread agreement among commenters that selection of a DTV standard should be analyzed in terms of network effects, that is the indirect benefits that accrue to other DTV users when any particular user adopts DTV. Broadcasters, computer interests and cable interests agree that broadcasting is a network product; that issues surrounding selection of a DTV standard are influenced by network effects; and that in order to evaluate the various alternatives, it is important to understand how network effects will operate. While commenters agreed on a common analytical framework, they disagreed on the relative severity of the startup, coordination and potential splintering problems facing digital broadcast television. Startup refers to the situation where everyone would be better off adopting DTV technology but no one has the incentive to move first. Coordination is the collaborative effort by broadcasters, consumer equipment manufacturers, and program producers that is necessary to introduce DTV. Splintering refers to the breakdown of the consensus or agreement to use the DTV Standard.

9. Commenters also disagreed on the availability and effectiveness of market-based mechanisms to solve these problems and to facilitate the goals and objectives established in this proceeding. Broadcasters, equipment manufacturers and some consumer
groups contend that DTV has startup, coordination and splintering problems that are more severe than those of other network industries and that a DTV standard adopted by the Commission is needed to overcome these problems. In contrast, cable and computer interests contend that all sectors of the broadcast industry have significant incentives to reach a consensus on transmission and reception standards without a government mandate.

10. Broadcasters warn that a market-driven selection of a standard would result in barriers to the introduction of DTV if different incompatible systems develop. Under a market-based approach, for example, broadcasters in the same community could select different and incompatible transmission systems so that consumers would only be able to obtain service from those television stations using the system that is compatible with the receiver they have purchased and be denied access to those using another transmission system. Broadcasters maintain that a government-mandated standard is essential to ensure a universally available, advertiser-supported over-the-air digital broadcast service in the future. In contrast, cable interests do not agree that there are unique characteristics or public policy goals attendant to broadcast DTV, or that there would be a market failure unless a mandatory transmission standard is adopted.

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IV. The Digital Television Standard ***

31. In the Fifth Further Notice, we proposed to adopt the ATSC DTV Standard. In addition to requesting comment on our proposal, we requested comment on alternative approaches to requiring a standard and specifically mentioned two options previously identified by the Commission: 1) authorizing use of a standard and prohibiting interference to it, but not requiring the use of that standard; and 2) adopting a standard for allocation and assignment purposes only. We also sought comment on requiring use of some layers of the ATSC DTV Standard but making others optional. In this Report and Order, we decide to adopt this last alternative and to require the use of all layers of the ATSC DTV Standard, except the video format layer, which will remain optional.

32. Our decision today to adopt the ATSC DTV Standard, as modified, is based on a careful weighing and balancing of the various goals and objectives outlined in this proceeding. We conclude that adopting the DTV Standard will fulfill the four objectives set out in the Fifth Further Notice.

33. First, we conclude that the DTV Standard will serve our goal of ensuring that all affected parties have sufficient confidence and certainty in order to promote the smooth introduction of a free and universally available digital broadcast television service. As we have recognized before, broadcast television is unique. It is free, available to nearly every American, and many Americans rely on broadcast television programming as a primary source of information and entertainment. Because of these characteristics, we stated that the goals of certainty and reliability take on special significance and strengthen the case for our adoption of a DTV standard. The DTV Standard we adopt today will help ensure that broadcast television remains available to all Americans in the digital era.

34. Many commenters argued that startup, coordination and potential splintering problems are so severe in digital broadcast television that they cannot be adequately solved without the Commission adopting a single DTV standard. We recognize that these problems may be more troublesome for digital broadcast television than cable,
DBS, MMDS and other subscription video services which have a greater degree of control over the equipment used by their customers. While we are not convinced that these problems are so severe that they would absolutely preclude us from allowing the market to operate without a set standard, we are concerned that market solutions may result in more than one sustainable transmission standard. Such an outcome might result in compatibility problems and increase the risk that consumer DTV equipment purchased in one city would not work well in another city; that a receiver would not display all the broadcast channels in a city; or that a digital television set purchased one year might not work several years later. Such results would hurt consumers and make it more difficult to preserve a universally available broadcast television service.

35. More than one transmission standard could also cause some consumers and licensees to postpone purchasing DTV equipment, because they do not wish to take the risk of investing in what may soon become obsolete technology, or because they believe better technologies will soon become available. This could slow investment during the early stages of the transition to DTV and, thereby, slow the transition to DTV.

36. In addition, more than one transmission standard would make it more difficult to facilitate an efficient allotment of broadcast channels and protect against interference. Determining interference performance becomes more complicated as the number of transmission systems increases, because each system’s interference characteristics must be tested against every other system. This could complicate moving some licensees to new channels following the conversion to DTV and decrease the amount of spectrum recovered.

37. For all of these reasons, we believe that adopting the DTV Standard provides additional certainty that the public policy goals unique to broadcast DTV are realized. Simply protecting a standard, or using a standard for allocation purposes would not address our concerns with “wait-and-see” behavior and preserving a universally available broadcast television service. We also reject the argument that the Agreement is too restrictive and still includes too many mandatory aspects of the DTV Standard. As more fully explained below, we believe that the entire DTV Standard is needed to achieve our goals.

38. Second, we conclude that adopting the DTV Standard will increase the availability of new products and services for consumers. The DTV Standard is flexible and extensible and permits data broadcasting as well as new services. With respect to data broadcasting, the DTV Standard provides for multiple 19 Mega ( Million) bits per second (“Mbps”) digital pipelines directly into the home of every American. While we would anticipate that licensees would, at the very least, continue to provide tomorrow what consumers have come to expect today—that is, at least one free program per 6 MHz channel—we also expect to authorize its use to transmit, for example, newspapers, stock market or sports data and, perhaps of greatest significance, software applications directly to computing devices.

39. Third, we conclude that incorporating the DTV Standard into our Rules will encourage technological innovation and competition. In particular, we conclude that our decision not to specify video formats will result in greater choice and diversity of equipment, allow computer equipment and software firms more opportunity to compete by promoting interoperability, and result in greater consumer benefits by allowing an increase in the availability of new products and services. By not adopting video
formats, we are allowing consumers to choose which formats are most important to them. Thus, we avoid the possibility that we could inhibit development of services which might, in fact, draw consumers more readily to embrace digital broadcasting and thus, hasten its adoption. By not specifying video formats in this respect we foster competition among those aspects of the technology where we are least able to predict the outcome, choosing instead to rely upon the market and consumer demand.

40. Moreover, the DTV Standard itself is highly extensible. The DTV Standard remains fully digital and incorporates packet identifiers (“PIDs”) which provide a large amount of “headroom” for further development without requiring changes to the DTV Standard. We note that ATSC is already at work on technical standards to facilitate data broadcasting with DTV systems. It has formed a new ATSC Specialist Group on Data Broadcasting to develop data broadcasting standards that “will provide the mechanism for distribution of computer files including programs (executable code) and data.”

41. Furthermore, there is little risk in such extensibility making obsolete consumer investment in digital receivers or decoders. While not all receivers would be capable of interpreting new PIDs, we are satisfied that, “[b]ackward compatibility is assured when new bit streams are introduced into the transport system as existing decoders will automatically ignore new PIDs” and continue to decode and display the intended material. The resultant conditions would be reminiscent of the introduction of color or stereo sound to the NTSC system. Earlier equipment continued to work unimpaired even as newer equipment provided additional or improved features.

42. Finally, we conclude that adopting this Standard provides for the minimum of regulation needed to provide for a smooth transition. At the same time, we provide the certainty needed for the transition. The DTV Standard eliminates an unnecessary government requirement by not specifying video formats. A key point of contention throughout this proceeding has been the migration to progressive scan transmission formats. While almost all parties agree that, ultimately, progressive scanning is superior to interlaced across a variety of dimensions, the record has been marked by dissent and contradiction about the desirability of allowing both interlaced and progressive scanning, given the over-the-air bandwidth limitation of 6 MHz. Adoption of the DTV Standard, which will allow video formats to be tested and decided by the market, avoids the risk of a mistaken government intervention in the market and is consistent with the deregulatory direction of the Telecommunications Act of 1996. ***

44. We recognize that although there was substantial praise among members of the broadcasting, equipment manufacturing and computer industries, support for the Agreement was not unanimous. The Coalition of Film Makers was party to the negotiations that resulted in the Agreement, but did not join in its support and opposes the Agreement because it does not require the display of films in the films’ original aspect ratios. We note, however, that consistent with the Agreement, we are not adopting Table 3 of the ATSC DTV Standard as part of the DTV Standard, and thus not adopting any particular aspect ratio. This goes far in meeting the Film Makers’ initially expressed concerns that by adopting Table 3 we might prevent films from being displayed in their original aspect ratio. We are sensitive to the concerns of film makers but note that the standard we adopt will allow pass-through of films in whatever format they are provided to broadcasters by distributors. The DTV Standard we are adopting not only does not impose any impediment to the display of films in their
original aspect ratios, but to the extent that resolution of displays is improved and a wide aspect ratio is adopted by consumers, the display of films in their original aspect ratios might be promoted.

46. We are not persuaded by those who contend that not specifying video formats in the DTV Standard will inject uncertainty into the transition process and delay implementation of digital television. As explained above, we believe that by adopting a transmission standard, we are providing the appropriate level of certainty that the digital television market will need to move forward. Our belief in this regard is supported by the fact that the major industries affected by this decision have reached an agreement that video formats need not be part of the DTV Standard. The confidence expressed by these parties gives us reasonable assurance it is not necessary to require video formats. We recognize that some parties contend that the Commission should not rely on the Agreement in considering an appropriate digital standard. As the analysis above shows, we are not relying solely on the fact that these parties reached agreement. Nevertheless, we believe the consensus flows from a sufficiently broad segment of the affected industries to warrant our recognition of the end result and factor it into our analysis. ***

VI. Licensing Technology

54. In earlier phases of this proceeding we indicated that, in order for DTV to be successfully implemented, the patents on the technology would have to be licensed to other manufacturing companies on reasonable and nondiscriminatory terms. We noted that the system proponents that participated in the Advisory Committee’s competitive testing process were required to submit a statement that they would comply with the ANSI patent policies. The proponents agreed to make any relevant patents that they owned available either free of charge or on a reasonable, nondiscriminatory basis and we stated that we intended to condition selection of a DTV system on such commitments. In the Fifth Further Notice, we sought additional comment on whether more detailed information on the specific terms of such patent licensing, how pending patents will be licensed, or any other intellectual property issues should be considered.

55. It appears that licensing of the patents for DTV technology will not be an impediment to the development and deployment of DTV products for broadcasters and consumers. We reiterate that adoption of this standard is premised on reasonable and nondiscriminatory licensing of relevant patents, but believe that greater regulatory involvement is not necessary at this time. We remain committed to this principle and if a future problem is brought to our attention, we will consider it and take appropriate action.

IX. Conclusion

61. This Report and Order is one of the crucial milestones in our effort to ensure that the benefits of digital technology are available to terrestrial television broadcasting and to the American public. We believe that the course we are taking will provide the certainty that many broadcasters, equipment manufacturers and consumers need to invest with confidence in new technology while at the same time preserving the flexibility to accommodate innovation and experimentation. In doing so, we believe our decision will provide many benefits to American consumers. We believe that the inter-industry agreement has provided us with a valuable roadmap to resolve seemingly conflicting goals. After thorough review of the record and reflection on these issues, we believe our decision strikes a proper balance in achieving all of our goals. Accordingly,
we will incorporate into our Rules, by reference, the ATSC Digital Television Standard ***.

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**Advanced Television Systems and their Impact upon the Existing Television Broadcast Service: Fifth Report and Order**
FCC 97-116 (April 21, 1997)

I. INTRODUCTION

1. Television has played a critical role in the United States in the second half of the twentieth century. A technological breakthrough—digital television—now offers the opportunity for broadcast television service to meet the competitive and other challenges of the twenty-first century.

2. The Telecommunications Act of 1996 (‘1996 Act’) provided that initial eligibility for any advanced television licenses issued by the Commission should be limited to existing broadcasters, conditioned on the eventual return of either the current 6 MHz channel or the new digital channel. Today we adopt rules to implement the statute. ***

II. ISSUE ANALYSIS

A. Goals

*** 4. *** These goals can be distilled into the two essential objectives that underlie the decisions we make today.

5. First, we wish to promote and preserve free, universally available, local broadcast television in a digital world. Only if DTV achieves broad acceptance can we be assured of the preservation of broadcast television’s unique benefit: free, widely accessible programming that serves the public interest. DTV will also help ensure robust competition in the video market that will bring more choices at less cost to American consumers. Particularly given the intense competition in video programming, and the move by other video programming providers to adopt digital technology, it is desirable to encourage broadcasters to offer digital television as soon as possible. We make decisions today designed to promote the viability of digital television services. Digital broadcasters must be permitted the freedom to succeed in a competitive market, and by doing so, attract consumers to digital. In addition, broadcasters’ ability to adapt their services to meet consumer demand will be critical to a successful initiation of DTV.

6. Second, we wish to promote spectrum efficiency and rapid recovery of spectrum. Decisions that promote the success of digital television—our first goal—promote this goal as well. The more quickly that broadcasters and consumers move to digital, the more rapidly spectrum can be recovered and then be reallocated or reassigned, or both. The faster broadcasters roll out digital television, the earlier we can recover spectrum.

7. Our decisions today further these goals. They ensure that broadcasters have more flexibility in their business. Broadcasters will be able to experiment with innovative offerings and different service packages as they continue to provide at least one free program service and meet their public-interest obligations. We choose to impose few restrictions on broadcasters and to allow them to make decisions that will further their ability to respond to the marketplace. We leave to broadcasters’ business judgment such decisions as whether to provide high definition television or whether, initially, to
simulcast the NTSC stream on DTV, and what and how many ancillary and supplementary services to provide. To aid the launch of digital services, we provide for a rapid construction of digital facilities by network-affiliated stations in the top markets, in order to expose a significant number of households, as early as possible, to the benefits of DTV. We require those most able to bear the risks of introducing digital television to proceed most quickly. Our decisions here will foster the swift development of DTV, which should enable us to meet our target of ending NTSC service by 2006. To permit careful monitoring of the development of digital television and an opportunity to reassess the decisions we make today, we intend to conduct a review of DTV every two years until the cessation of NTSC service.

B. Channel Bandwidth

8. Background. In the Fourth Further Notice/Third Inquiry, we noted that we had previously decided that DTV would be introduced by assigning existing broadcasters a temporary channel on which to operate a DTV station during the transition period. We also noted that the DTV transmission system was designed for a 6 MHz channel and added that “we continue to believe that providing 6 MHz channels for ATV purposes represents the optimum balance of broadcast needs and spectrum efficiency.”

9. Comments. All broadcasters filing comments support affording a second 6 MHz channel per broadcaster for DTV.***

10. However, Media Access Project, et al. (“MAP”) argues that the Commission should provide broadcasters only enough spectrum to provide one “free” digital program service, either by allocating less than 6 MHz channels to broadcasters, by allocating the spectrum to others and only affording broadcasters “must carry” rights; or by allocating the spectrum to broadcasters but requiring them to lease out excess capacity to unaffiliated programmers. ***

11. Decision. We invited comment in the Fourth Further Notice/Third Inquiry on any means of achieving greater spectrum efficiency. Based on the comments, we continue to believe that providing 6 MHz channels for DTV purposes “represents the optimum balance of broadcast needs and spectrum efficiency.” See Fourth Further Notice/Third Inquiry, supra, at 10543. We do not believe that greater spectrum efficiency can be achieved by adopting a different channel size. Indeed, use of 6 MHz channels would facilitate spectrum efficiency because making the DTV channel the same width as the analog channel will afford greater flexibility at the end of the transition in terms of the choice of channel the broadcaster retains for DTV purposes.

12. Moreover, contrary to those comments that disagreed with allotting 6 MHz channels for DTV, we believe that the use of 6 MHz channels is necessary to provide viewers and consumers the full benefits of digital television made possible by the DTV Standard, including high definition television (“HDTV”), standard definition television, and other digital services. The DTV Standard was premised on the use of 6 MHz channels. To specify a different channel size at this late date would not promote our goals in adopting the DTV Standard and would prolong the conversion to DTV. Specifically, we believe that failing to specify a 6 MHz channel would undermine our goals, expressed in the Fourth Report and Order, of fostering an expeditious and orderly transition to digital technology and managing the spectrum to permit the recovery of contiguous blocks of spectrum and promote spectrum efficiency. The conversion to DTV
would undoubtedly be significantly delayed if we set aside the longstanding expectations of the parties, on which they have based the technology and established their plans, and specified a different channel bandwidth. Accordingly, we reaffirm our earlier judgment and will allot 6 MHz channels for DTV.

C. Eligibility

13. Background. We proposed to limit initial eligibility for DTV channels to existing broadcasters. Our proposed criteria for existing broadcasters included full-service television broadcast station licensees, permittees authorized as of October 24, 1991, and parties with applications for a construction permit on file as of October 24, 1991, who are ultimately awarded a full-service broadcast license. After release of the Fourth Further Notice/Third Inquiry, Congress statutorily addressed eligibility in the 1996 Act. Congress instructed the Commission to limit the initial eligibility for advanced television licenses to persons that, as of the date of the issuance of the licenses, are licensed to operate a television broadcast station or hold a permit to construct such a station. The 1996 Act did not change the fact that the Commission lacks statutory authority to auction broadcast spectrum.

17. Decision. In the 1996 Act, Congress specifically addressed the eligibility issue. Congress provided that the Commission “should limit the initial eligibility for [DTV] licenses to persons that, as of the date of such issuance, are licensed to operate a television broadcast station or hold a permit to construct a station (or both) . . .” 47 U.S.C. 336(a)(1). Following Congress’ direction, we determine that initial eligibility should be limited to those broadcasters who, as of the date of issuance of the initial licenses, hold a license to operate a television broadcast station or a permit to construct such a station, or both.

D. Definition of Service

1. Spectrum Use

19. Background. The Fourth Further Notice/Third Inquiry reaffirmed our intention to preserve and promote universal, free, over-the-air television. We recognized that broadcast television has become an important part of American life and thus stated “we envision that the 6 MHz channel earmarked for [DTV] will be used for free, over-the-air broadcasting.” We also recognized the increased flexibility that DTV offered broadcasters and noted that “allowing at least some level of flexibility would increase the ability of broadcasters to compete in an increasingly competitive marketplace, and would allow them to serve the public with new and innovative services.”

20. The DTV Standard, adopted by the Commission in the Fourth Report and Order, See 47 C.F.R. 73.682(d), permits broadcasters to offer a variety of services. It allows broadcasters to offer free television of higher resolution than analog technology. It allows the broadcast of at least one, and under some circumstances two, high definition television programs; and it allows “multicasting,” the simultaneous transmission of three, four, five, or more digital programs. The Standard also allows for the broadcast of CD-quality audio signals. And it permits the rapid delivery of large amounts of data: an entire edition of the local newspaper in less than two seconds, sports information, computer software, telephone directories, stock market updates, interactive educational materials and, indeed, any information that can be translated into digital bits. In addition to allowing broadcasters to transmit video, voice, and data simultaneously, the DTV Standard allows broadcasters to do so dynamically, meaning that they
can switch back and forth quickly and easily. For example, a broadcaster could transmit a news program consisting of four separate SDTV programs for local news, national news, weather and sports; while interrupting that programming with a single high definition television commercial with embedded data about the product; or transmit a motion picture in a high definition format, while simultaneously using the excess capacity for transmission of data unrelated to the movie. ***

27. Decision. As we have noted before, an overarching goal of this proceeding is to promote the success of a free, local television service using digital technology. ***

28. We expect that the fundamental use of the 6 MHz DTV license will be for the provision of free over-the-air television service. In order to ease the transition from our current analog broadcasting system to a digital system, we will require broadcasters to provide on their digital channel the free over-the-air television service on which the public has come to rely. Specifically, broadcasters must provide a free digital video programming service the resolution of which is comparable to or better than that of today’s service and aired during the same time periods that their analog channel is broadcasting.

29. We wish to preserve for viewers the public good of free television that is widely available today. At the same time, we recognize the benefit of permitting broadcasters the opportunity to develop additional revenue streams from innovative digital services. This will help broadcast television to remain a strong presence in the video programming market that will, in turn, help support a free programming service. Thus, we will allow broadcasters flexibility to respond to the demands of their audience by providing ancillary and supplementary services that do not derogate the mandated free, over-the-air program service. Ancillary and supplementary services could include, but are not limited to, subscription television programming, computer software distribution, data transmissions, teletext, interactive services, audio signals, and any other services that do not interfere with the required free service. ***

33. Moreover, we believe that the approach we take here will serve the public interest by fostering the growth of innovative services to the public and by permitting the full possibilities of the DTV system to be realized. One of our goals is to promote spectrum efficiency. Encouraging an expeditious transition from analog to digital television and a quick recovery of spectrum will promote that goal. By permitting broadcasters to assemble packages of services that consumers desire, we will promote the swift acceptance of DTV and the penetration of DTV receivers and converters. That, in turn, will help promote the success of the free television service. As discussed above, digital television promises a wealth of possibilities in terms of the kinds and numbers of enhanced services that could be provided to the public. Indeed, we believe that giving broadcasters flexibility to offer whatever ancillary and supplementary services they choose may help them attract consumers to the service, which will, in turn, hasten the transition. In addition, the flexibility we authorize should encourage entrepreneurship and innovation. For example, it may encourage the development of compression technologies that could allow even more digital capacity on a 6 MHz channel, paving the way for multiple high definition programs and more free programming than would otherwise be offered. ***

2. HIGH DEFINITION

37. Background. In the Fourth Further Notice/Third Inquiry, the Commission *** requested comment as to whether it should require broadcasters to provide a minimum
amount of high definition television and, if so, what minimum amount should be re-
38. Comments. Many commenters are opposed to a minimum HDTV requirement. Commenters urging the Commission not to apply a minimum HDTV requirement but rather to leave that determination to the marketplace and thus to broadcasters and viewers include the National Association of Broadcasters (“NAB”), ALTV, the Benton Foundation, Microsoft Corporation, Telemundo Group, Inc. (“Telemundo”), and AAPTS/PBS. NAB notes that mandating a certain amount of HDTV could impair broadcasters’ ability rapidly to fuel development of the DTV market with complementary program offerings and could prolong the transition to digital television. NAB states: “By providing maximum latitude, the Commission will encourage development of diverse new programming services that will facilitate the most rapid acceptance of ATV and lead to the most rapid return of NTSC spectrum.” *** The Benton Foundation argues that mandating an HDTV minimum serves no public interest because it does not increase the number of voices in the marketplace or contribute to the civic discourse of democracy.

39. Support for a minimum HDTV requirement is expressed by three networks, HBO, NYNEX Corporation, receiver manufacturers, Viacom, Golden Orange Broadcasting Co., Inc. (“Golden Orange”), and the National Consumers League. Supporters of a minimum requirement generally argue that a requirement will help promote the early availability of HDTV programming, create demand for HDTV receivers, stimulate the market, and speed the transition. Golden Orange, for example, notes that without HDTV, the public will not be motivated to buy receivers. HBO argues that the legal and policy principles that justify awarding incumbent broadcasters a second channel for DTV do not permit broadcasters to use this second channel for anything other than HDTV programming, and, if the FCC allows other than HDTV programming, it should require that a substantial portion of the broadcast day, especially during dayparts and prime time, be devoted exclusively to HDTV. These commenters vary on the amount of HDTV programming that should be required and on how the minimum should be implemented.

41. Decision. Our decisions today, and our previous adoption of the DTV Standard, give broadcasters the opportunity to provide high definition television programming, but we decline to impose a requirement that broadcasters provide a minimum amount of such programming and, instead, leave this decision to the discretion of licensees. ***

42. Our decisions to adopt the DTV Standard and to use 6 MHz channels permit broadcasters to provide high definition television in response to viewer demand. If we do not mandate a minimum amount of high resolution television, we anticipate that stations may take a variety of paths: some may transmit all or mostly high resolution television programming, others a smaller amount of high resolution television, and yet others may present no HDTV, only SDTV, or SDTV and other services. We do not know what consumers may demand and support. Since broadcasters have incentives to discover the preferences of consumers and adapt their service offerings accordingly, we believe it is prudent to leave the choice up to broadcasters so that they may respond to the demands of the marketplace. A requirement now could stifle innovation as it would rest on a priori assumptions as to what services viewers would prefer. Broadcasters can best stimulate consumers’ interest in digital services if able to offer the
most attractive programs, whatever form those may take, and it is by attracting consumers to digital, away from analog, that the spectrum can be freed for additional uses. Further, allowing broadcasters flexibility as to the services they provide will allow them to offer a mix of services that can promote increased consumer acceptance of digital television, which, in turn, will increase broadcasters’ profits, which, in turn, will increase incentives to proceed faster with the transition.

44. We note that some commenters argued that a high definition television mandate is necessary to give program producers and equipment manufacturers the necessary incentives to support high resolution television, and to provide viewers and consumers enough high resolution television programming to foster demand for such programming and to drive DTV receiver purchases. To the contrary, however, we believe that a minimum high definition television requirement is unnecessary to achieve these goals. We note in this regard that broadcasters and networks have emphasized their commitment to high definition television. We find nothing in the record that identifies a market failure or other reason to impose a governmental requirement for high definition television. High definition television will afford broadcasters an important tool in the increasingly competitive video programming market. There is no reason to believe that a government mandate is necessary to ensure that high definition television gets a fair chance in the marketplace.

E. Public Interest Obligations

45. Background. As we stated in the Fourth Further Notice, the rules imposing public interest obligations on broadcast licensees originate in the statutory mandate that broadcasters serve the “public interest, convenience, and necessity,” as well as other provisions of the Communications Act. ***

48. Decision. In this proceeding we seek to promote the successful transition of analog broadcast television into a digital broadcast television service that serves the public interest. Broadcasters have long been subject to the obligation to serve the “public interest, convenience, and necessity.” 47 U.S.C. 307(a), 309(a). In the 1996 Act, Congress provided that broadcasters’ public interest obligations extend into the digital environment:

“(d) Public Interest Requirement. --Nothing in this section shall be construed as relieving a television broadcasting station from its obligation to serve the public interest, convenience, and necessity. In the Commission’s review of any application for renewal of a broadcast license for a television station that provides ancillary or supplementary services, the television licensee shall establish that all of its program services on the existing or advanced television spectrum are in the public interest.”

47 U.S.C. 336(d). In enacting this provision, Congress clearly provided that broadcasters have public interest obligations on the program services they offer, regardless of whether they are offered using analog or digital technology. ***

50. Some argue that broadcasters’ public interest obligations in the digital world should be clearly defined and commensurate with the new opportunities provided by the digital channel broadcasters are receiving. Others contend that our current public interest rules need not change simply because broadcasters will be using digital technology to provide the same broadcast service to the public. We are not resolving this debate today. Instead, at an appropriate time, we will issue a Notice to collect and
consider all views. *** Thus as to the public interest, our action today forecloses nothing from our consideration. ***

K. All-Channel Receiver Issues

107. Background. Traditionally, we have not regulated broadcast receivers except insofar as they incidentally radiate energy. However, the All Channel Receiver Act authorizes us to require that television receivers “be capable of adequately receiving all frequencies allocated by the Commission to television broadcasting.” While we require that all TV broadcast receivers be capable of adequately receiving all channels allocated by the Commission to the television broadcast service, we previously determined in this proceeding that the All Channel Receiver Act does not mandate the manufacture of dual-mode (DTV and NTSC) receivers. ***

109. Comments. Most broadcasters support a requirement that all DTV receivers and set-top converters be able to receive and display NTSC signals, and receive all DTV signals included in the DTV transmission standard and display them in the highest quality format which the particular set is designed to accommodate.

110. While most broadcasters and Motorola favor regulations governing how DTV signals are displayed on DTV receivers, most equipment manufacturers and other commenters favor a market-driven approach. ***

111. Decision. The digital broadcast transmission standard which we adopted in the Fourth Report and Order differed from the standard we proposed in the Fifth Further Notice. Many of the comments we received in response to the Fifth Further Notice assumed that the Commission would adopt a DTV transmission standard that included specific video formats. However, the standard we adopted in the Fourth Report and Order did not specify video formats. We chose instead to allow video formats to be determined by the market and consumer demand. Because of this important modification, we believe that some of the arguments made by the commenters on specific all-channel receiver issues are no longer applicable.

112. We have decided that, at this time, equipment manufacturers should have maximum latitude to determine which video formats DTV equipment will receive. We believe that it is likely that market forces will provide incentives for broadcasters and equipment manufacturers to work closely together to produce the receiver and converter designs most valued by consumers.

113. We do not believe that our goals would be advanced by mandating that all digital receivers receive and display NTSC signals and DTV signals, regardless of format, aspect ratio, or progressive or interlaced scanning, as broadcasters argue. We expect that equipment manufacturers will make available to consumers digital receivers that receive both NTSC and DTV signals. However, we will not preclude equipment manufacturers from designing digital receivers that do not receive NTSC signals. In addition, we believe that equipment manufacturers should be allowed to offer lower-cost, digital receivers that receive only progressive scan or SDTV formats. Our two-year reviews will give us an opportunity to monitor DTV receiver designs and address any problems that may arise.

114. We have decided to postpone any decision concerning a labeling requirement. We are providing broadcasters flexibility in their choice of video formats and equipment manufacturers flexibility in their choice of receiver designs and we are hopeful that this will result in products and services that draw consumers to DTV. At this early
stage of the transition process, we will rely on consumer electronics manufacturers and retailers to provide the information necessary for consumers to make informed choices. Should problems arise, and consumers become confused, as the transition moves forward, we will have opportunity to revisit labeling requirement issues through our review process. Finally, we recognize that there is an enormous embedded base of video cassette recorders, cable decoder boxes, laser disc players, and other video equipment that use NTSC receivers for non-broadcast purposes. This suggests that there may be a continuing market for the sale of NTSC display devices, even after the conversion to DTV. Therefore, we decline to limit the sale of NTSC-only display devices.

**DVD Joint Licensing of Patents Request Letter**

July 29, 1998

Honorable Joel I. Klein, Esq.,
Assistant Attorney General,
Antitrust Division,
United States Department of Justice,
10th Street and Constitution Avenue, N.W.,
Washington, D.C. 20530.

Re: Request for Business Review Letter Regarding the Licensing of Patents Essential to DVD-Video and DVD-ROM

Dear Mr. Klein:

On behalf of Koninklijke Philips Electronics, N.V. (“Philips”), Sony Corporation of Japan (“Sony”), and Pioneer Electronic Corporation of Japan (“Pioneer”) (and their affiliates which are involved in the patent licensing program described below) we submit this request for a Business Review pursuant to 28 C.F.R. § 50.6 regarding the proposed arrangement under which certain patents essential to the manufacture and use of DVD-Video and DVD-ROM will be licensed on reasonable and non-discriminating terms (the “Proposed Licensing Program”).

DVD (or Digital Versatile Discs) refers to a high density CD-sized optical disc in which signals are encoded and stored in digital form and are then read and reproduced by players using an optical read out beam. Relying on basic CD technology, the DVD discs and players allow for an increase of approximately sixty times the storage capacity of a typical CD or CD-ROM. DVD-Video and DVD-ROM are two formats relating to high density optical discs which have been described by Philips, Sony, Pioneer and several other companies in the DVD-Specification for Read Only Disc version 1.0 dated August 1996 and in several updates thereto (a copy of the specification is set forth in Exhibit A hereto).

A single DVD format for video and ROM was defined in an open process by participating companies over the course of several years at the request of various industries—particularly the computer industry—which asserted that multiple DVD formats would delay introduction of this new and beneficial product, increase costs, and much like the incompatible BETA and VHS formats, result in losses to consumers who purchased products based on a format which quickly became obsolete. In defining the
DVD-Video and DVD-ROM formats, input was solicited and received from a variety of industries and an even wider variety of companies throughout the world.

As the format was developed and refined, it became clear that numerous independent companies had been granted patents which were relevant to DVD-Video and DVD-ROM. The three companies submitting this request actively sought to join the licensing of their patents with the patents of other companies which also claimed to have patents which are essential to DVD-Video and DVD-ROM. To date, those efforts have not resulted in any other companies joining the Proposed Licensing Program. Philips, Sony and Pioneer, however, remain willing to include others having essential patents in the licensing program described below.

The companies submitting this request firmly believe that, in the near future, DVD products will be widely marketed by a wide variety of companies. We are also convinced that, once these products are manufactured and distributed in volume, there will be great consumer demand for them. We anticipate that the producers and sellers of DVD discs and players will largely be the companies that currently manufacture and sell CDs and the equipment that plays CDs and CD ROMs. Thus, prospective licensees include manufacturers of consumer audio equipment and computer disc drives. Typically, licensees to manufacture DVD discs will be replicators, as is the case with CDs. In sum, the DVD licenses will be offered to the same classes of sophisticated licensees as are CD licenses, and there is every reason to expect that the transfer of this valuable DVD technology will have the same beneficial effects upon the relevant industries that CD licenses had upon the recorded music industry 15 years ago.

In one respect, licensors of DVD technology face risks and uncertainties that were not faced 15 years ago by the creators of CD technology. During the past year, several different formats have been announced that will compete with various applications of DVD for the favor of consumers. For example, Circuit City and others have developed Digital Video Express (DIVX), a pay-per-play system that allows consumers who have purchased a DIVX-compliant player to purchase a disc at a lower price and to play that disc for a limited period of time without having to return the disc when finished. The disc may later be “re-activated” for additional plays upon payment of additional fees. Various companies have announced that they will offer DIVX discs, including Twentieth Century Fox, the Walt Disney Company, Paramount Pictures, Universal Studios and Dream Works. It is our understanding that DIVX discs will not play on non-DIVX DVD players. In addition, NEC, one of Japan’s largest electronics manufacturers, has announced its intention to introduce Multimedia Video File (MMDF), an optical disc format which is expected to compete directly with certain applications of DVD technology. Other new announced products include TeraStor’s Near Field Recording (NFR) technology and Advanced Storage Magneto-Optical (ASMO). In short, this is an area in which several well-financed suppliers are prepared to compete aggressively with DVD products. Obviously, there also will be competition among those selling DVD products.

Offering a patent license for all essential patents of the three companies under the Proposed Licensing Program will provide several pro-competitive benefits, including (1) reducing the uncertainty of the availability of patent licenses so that those who require a license to manufacture or use a DVD-Video or DVD-ROM product are aware that a license from the three companies easily can be obtained; (2) reducing the royalties that likely would be payable if the three companies licensed their essential
patents on their own; (3) reducing the cost for each prospective licensee of determining its own the identities of owners of essential patents and the entities from which licenses which must be obtained; (4) reducing other transaction costs of licensees having to negotiate and execute separate licenses; (5) reducing the transaction costs of essential patent holders offering separate licenses thereby allowing for a reduction in the price of the license; and (6) offering the same royalty rate and other conditions to all interested licensees so that no entity manufacturing or selling a DVD-Video or DVD-ROM product will have a price advantage over any other such entity as a result of entering into a license for the essential patents of Philips, Sony and Pioneer.

The Proposed Licensing Program will be structured to avoid any countervailing aspects that may be deemed anticompetitive. For example, each patent holder will retain the right to license its patents outside the Proposed Licensing Program under whatever terms and conditions it reaches with any prospective licensee, and each prospective licensee will be informed in writing of its option to negotiate such an individual license under reasonable terms and conditions. The Philips personnel who are responsible for the Proposed Licensing Program will play no role in the marketing of DVD products. An independent expert in the art has been retained to insure that the portfolio of patents that will be licensed under the Program includes only those patents which are essential to DVD-Video and DVD-ROM products. Although Philips, Sony and Pioneer have not been successful in having other companies join their licensing program, they remain willing to include any others having essential patents who wish to join. There will be no royalty payable by the licensee unless a licensed patent would be infringed but for the license, information which the licensee may be required to disclose to monitor infringement and royalty payments will not be disclosed to any of the licensors, but only to a third party expert retained by the licensors, patents included in the licenses will be specifically identified in appendices to the license, and Philips, Sony and Pioneer will commit to licensing to any licensee any essential patent rights they may acquire subsequent to the date specified in the license.

Set forth below is a fuller description of the proposed licensing terms and the agreements among the licensors.

The Proposed Patent License

Two licenses (Appended hereto as Exhibits B and C) will be offered, both in substantially the same form. One is for DVD players, the other for DVD discs. A three page “Agreement” sets forth a few basic terms of the license and also specifically incorporates the “Conditions” of the license which are appended to the Agreement.

On the first page of the Agreement, it is specifically noted that Philips, Sony and Pioneer are each willing to license their respective patent rights for optical disc or player manufacturing whether within or outside the standard DVD specifications on reasonable terms and conditions. Thus, any prospective licensee who is dissatisfied with the terms of the Proposed Licensing Program is assured of this alternative.

Article 2 of the Conditions sets forth the terms of the license grant, and provides for a license under Licensed Patents which are defined in Article 1.07 as all patent rights pertinent to DVD discs or players which Philips has acquired the right to license, which have or are entitled to a priority date prior to January 1, 1997, and which are essential to DVD discs or players. Article 1.07 goes on to define as “essential” those patents which are necessary as a practical matter for compliance with the DVD-Video
or DVD-ROM specifications. The license, therefore, includes not only all patents technically necessary to manufacture a product to the standard specifications, but also those which a typical licensee is likely to require. For example, it may be theoretically possible to design around a particular patent at significant additional cost (and without additional benefit), but few, if any, licensees who pay the standard royalty rate for other essential patents would want such patent excluded from the license. Indeed, it is fair to say that most, if not all, licensees would want such patents included.

Article 2.07 describes the method by which patents are selected for the portfolio license. The prospective licensee is specifically informed that Philips has appointed an independent patent expert to evaluate the patents of the three licensors for “essentiality” and that the portfolio included in the license may be amended from time to time based on the results of that evaluation.

In Article 2.03, each licensor agrees to grant a license to each licensee under any essential patent which Philips, Sony or Pioneer acquire the right to license in the future. Thus, to the extent any of the licensors are issued essential patents in the future or other companies join the proposed licensing program, all licensees are guaranteed a license under any such essential patent.

Articles 2.05 and 2.06 set forth the terms of the licensees’ grant of patent rights. For the identical term of the license granted by Philips, Sony and Pioneer, the licensee agrees to grant to the licensors and other licensees (who also agree to the terms of the grant back) a royalty bearing license on essential patents. Thus, the scope of the grant back is virtually identical to the scope of the license itself. The grant back would not create any disincentive to innovate as it specifically allows the licensee to charge a royalty for its grant of a license and would only prevent a particular patent holder from deciding to use its after-acquired patent position to completely block others from competing in a business in which they already have invested substantial resources.

Article 4 sets forth the royalty payments to be made by licensees. The license provides for a $10,000 payment upon execution of the license ($5,000 of which may be credited to royalty payments) and a running royalty of $.05 per disc or 3.5% of the net selling price of a player, with a minimum player payment of $7.00 until January 1, 2000 and a minimum of $5.00 thereafter.²

Article 4 makes plain that no royalties are due unless “a Licensed Patent is utilized” and, therefore, there are no royalty paying obligations regardless of whether the 10-year license is in effect if the licensee has adopted new or different technology that does not utilize any of the patents in the portfolio.

Articles 4.09 and 4.10 provide that licensees must maintain and furnish certain information relevant to issues of infringement and appropriate royalty payments, but specify that such information shall be provided to independent experts rather than to any licensor itself.

The licenses provide for “most favorable nations” terms under which each licensee is assured of receiving the most favorable royalty rate granted any other portfolio licensee under the conditions specified in Article 5. Thus, no similarly situated licensee is given a competitive advantage by the license over any other such licensee.

² Widespread public reports have suggested that the typical disc will retail for approximately $20-25. The per disc royalty thus amounts to approximately 22% of the retail price of discs, although the royalty typically will be payable by the disc replicator.
Article 10.05 gives each licensor the right to withdraw its own patents from the portfolio license with respect to any licensee which both (1) brings a lawsuit against the licensor for infringement of an essential DVD patent and (2) refuses to license such patents to the licensor on fair and reasonable terms. This provision is necessary to prevent portfolio licensees from taking unreasonable and unfair advantage of the fact that each portfolio licensor already has agreed to license its patent on the open, fair and non-discriminatory terms provided in the portfolio license at royalty rates that are likely considerably lower than what would be payable if patents were licensed individually outside the portfolio license.

Without the provisions of Article 10.05, a portfolio licensee could—while enjoying the considerable benefits of the portfolio license—attempt to extract unreasonable terms for licensing its patents as a result of already being licensed under the portfolio license. Article 10.05 merely “evens the playing field,” returns the parties to the bargaining position each would have been in but for the portfolio license, and creates no competitive issues. This is particularly so in light of each portfolio licensor’s undertaking to license its patents outside the portfolio license. Thus, a licensee who subjects itself to the provision of Article 10.05 by filing suit and refusing to grant a license on fair and reasonable terms is not denied the right to a license for essential patents, just to a license for essential patents on the favorable terms of the portfolio license.

Finally, Article 11.04 provides that any disputes involving the license shall be submitted to arbitration in New York and resolved under New York law. This provides for a certain and cost effective method to resolve disputes.

Agreement Among Licensors

The agreements among Philips, Sony and Pioneer relating to the Proposed Licensing Program are set forth in two bilateral Agreements and Amendment No. 1 thereto, one between Sony and Philips and one identical agreement between Pioneer and Philips. The Agreements and Amendments are appended hereto as Exhibit D.

The Agreements basically set forth the terms under which Philips shall license the three companies’ essential patents and set out many of the same terms which are incorporated in the licenses itself and are discussed above. The Agreements make plain that the Proposed Licensing Program does not in any way impede the companies’ ability to license their patents on their own under any conditions they may negotiate.

Article 2.01 of the Agreement provides that Philips shall offer the portfolio license to “all interested third parties.” Article 5 of Amendment No. 1 further specifies that Philips shall grant licenses “to all interested parties and shall not discriminate against or among potential licensees” although Philips is entitled to seek financial guarantees on royalty payments when required. The Agreements also set out various terms for the collection and distribution of royalties. Although Article 4.03 provides that each party may consult with the others in the event of a good faith belief that an act of infringement has occurred, Article 4.04 provides that each party retains the right to enforce its patents as it sees fit.

Article 7 of Amendment No. 1 sets forth the details of the procedure by which Philips shall retain an independent expert to assure that all patents in the portfolio are essential, and provides the procedure under which patents may be added to the Proposed Licensing Program.
Conclusion
It is anticipated that DVD-Video and DVD-ROM applications will gain widespread acceptance among consumers in the United States and throughout the world. Intellectual property rights granted by the United States and other sovereign nations to numerous unrelated entities could seriously delay if not block the introduction of this new and significant technology. The Proposed Licensing Program described above eliminates one potential impediment to the implementation of DVD-Video and DVD-ROM by allowing all essential patents of Philips, Sony and Pioneer to be offered in a single, non-discriminatory, fair and cost effective licensing program. The Proposed Licensing Program has been carefully crafted in an effort to avoid any competition concerns which may arise from the combining of patents belonging to independent entities within a single license. We respectfully submit that the Proposed Licensing Program has successfully addressed any competition concerns, and that the pro-competitive aspects of the program far outweigh any potential competition issues which may remain.

We will be available at your convenience to provide any further information you may require. We very much appreciate the Division’s attention to this matter.

Respectfully,
Garrard R. Beeney
for Koninklijke Philips Electronics, N.V.; Sony Corporation of Japan and Pioneer Electronic Corporation of Japan

DVD Business Review Letter Response
December 16, 1998
VIA FAX
Garrard R. Beeney, Esq.
Sullivan & Cromwell
125 Broad Street
New York, New York 10004-2498
Dear Mr. Beeney:
This letter is in response to your request on behalf of Koninklijke Philips Electronics, N.V. (“Philips”), Sony Corporation of Japan (“Sony”) and Pioneer Electronic Corporation of Japan (“Pioneer”) for the issuance of a business review letter pursuant to the Department of Justice’s Business Review Procedure, 28 C.F.R. ¶ 50.6. You have requested a statement of the Department of Justice’s antitrust enforcement intentions with respect to a proposed arrangement pursuant to which Philips will assemble and offer a package license under the patents of Philips, Sony and Pioneer (collectively, the “Licensors”) that are “essential,” as defined below, to manufacturing Digital Versatile Discs (DVDs) and players in compliance with the DVD-ROM and DVD-Video formats, and will distribute royalty income among the Licensors.

1. The DVD-ROM and DVD-Video Formats
The Standard Specifications for the DVD-ROM and DVD-Video formats describe the physical and technical parameters for DVDs for read-only-memory and video applications, respectively, and “rules, conditions and mechanisms” for player units for
the two formats. In either format, the DVD offers storage capacity more than seven times that of a compact disc; a single-layer, single-sided DVD, for example, can store 4.7 billion bytes (4.38 GB) of information including audio, video, text, and data. Employing compression technology, a DVD-Video disc can hold a 135-minute feature film on a single side.

The Licensors, along with a number of other producers of consumer electronics hardware, software, or both, established the Standard Specifications. These Standard Specifications appear to implicate the intellectual property rights of numerous firms.

II. The Proposed Arrangement

The proposed arrangement is embodied in two pairs of licenses: two separate but substantially identical licenses to Philips from Sony and Pioneer (the “DVD-Video and DVD-ROM Agreement”); and a pair of standard licenses from Philips to DVD makers (the “Disc License”) and player manufacturers (the “Player License”). Through these two sets of licenses, Philips aggregates the Licensors’ patents and will disseminate them to users of the DVD-ROM and DVD-Video formats.

A. The patents to be licensed

Under the proposed arrangement, Philips is licensing from the other Licensors those patents that: (i) they owned or controlled as of specific dates in 1997; (ii) are entitled to a priority date before December 31, 1996, and (iii) are “essential,” which is defined as “necessary (as a practical matter) for compliance with the DVD Video or DVD-ROM Standard Specifications.”

1 DVD Specifications for Read-Only Disc (the “Standard Specifications”), Part 3: Video Specifications, Version 1.1 (December 1997), § 3.3.1. You have attached the Standard Specifications as Exhibit A to your letter. DVD-Video, which is described in Part 3 of the Standard Specifications, appears to be a subunit of the DVD-ROM format. The DVD-Video specifications indicate that DVD-Video discs shall comply with Parts 1 and 2 of the Standard Specifications, which describe the disc’s physical and file-system characteristics, respectively. Id., § 1.1.

2 Each of the Licensors is a leading manufacturer of consumer electronics equipment and software, including both DVD-Video discs and DVD players, and a producer of content, such as feature-length motion pictures, that can be incorporated in DVDs. Upon the completion of the pending sale of its PolyGram N.V. subsidiary to The Seagram Co., Ltd., however, Philips will no longer have a substantial presence in any market for recorded music, film, or other entertainment software, or the production of content for such software.

3 In addition to the Licensors, the publishers of the DVD-ROM Specifications are: Hitachi, Ltd.; Matsushita Electric Industrial Co., Ltd.; Mitsubishi Electric Corporation; Thomson Multimedia; Time Warner Inc.; Toshiba Corp.; and Victor Company of Japan, Ltd. While your letter includes information concerning the process by which these formats were established, you have not requested, and this letter does not offer, an opinion on any competitive issues presented by the development of these formats or any other DVD-related format.

4 You have attached the Player License as Exhibit B to your letter, and the Disc License as Exhibit C. I will refer to the Disc and Player Licenses collectively as the “Portfolio Licenses.”

5 DVD-Video and DVD-ROM Agreement, Arts. 1.06-1.07. You have confirmed that the term “priority date” means, for any given patent in the Portfolio License, the first date on which the application for that patent, or for a patent on the same invention in another country, was filed. See 35 U.S.C. § 119.

6 We understand this definition to encompass patents which are technically essential — i.e., inevitably infringed by compliance with the specifications — and those for which existing alternatives are economically unfeasible. As discussed below, a less concrete definition of the term “as a practical matter” could give rise to difficult competitive issues. Neither Sony’s and Pioneer’s licenses to Philips nor the Portfolio Licenses convey rights to patents that are “essential” by virtue of the DVD formats’ incorporation of
with its own patents that meet the same criteria, in the Portfolio Licenses for use in making discs or players, respectively, that comply with either of those formats.

Initially, each Licensor has designated its “essential” patents for inclusion in the Portfolio Licenses; there are 115 patents in all for the manufacture of DVD players, and 95 for the manufacture of the discs themselves. However, the Licensors have retained a patent expert to review the designated United States patents and make an independent determination as to their “essentiality.” His determination, reflecting his “best independent judgment,” is to be based on information he obtains from the Licensors, others in the industry, and the advice of technical experts he may retain. The review, which is already underway, will not entail an examination of validity. Should the expert determine that a patent initially designated as “essential” is not, Philips will exclude it from the Portfolio Licenses. However, licensees that have already taken the Disc or Player License shall have the option to retain their licenses to the newly excluded patent.

While one of the license documents indicates that the patent expert is to be “appointed” by Philips, the letters that the Licensors will send to the expert state that all of them are retaining him. Further, the letters state that the expert’s conclusions will have no bearing on either his compensation or any Licensor’s future retention of him or his law firm.

As noted above, the DVD-Video and DVD-ROM Agreements ensure only that the Licensors’ “essential” patents with filing dates before December 31, 1996, and which were owned or controlled by the Licensors as of November 24, 1997 (or, in Pioneer’s case, October 1, 1997) will be part of the Portfolio Licenses. You have stated to us that, as of December 1, 1998, no Licensor has indicated that it owns or controls an “essential” patent that falls outside these bounds. Should such a patent emerge, however, the DVD-Video and DVD-ROM Agreements commit the Licensors to licensing it, “at fair and reasonable conditions,” to any licensee under the Portfolio Licenses, either through Philips or individually.

B. The joint licensing arrangement

1. The licenses from Sony and Pioneer to Philips

Sony and Pioneer have granted Philips nonexclusive, sublicensable licenses on their “essential” patents to enable Philips to grant licenses “to all interested parties . . . to manufacture, have made, have manufactured components of, use and sell or otherwise dispose of” discs and players that conform to the Standard Specifications. The licenses obligate Philips to grant licenses on the “essential” patents for use in conformity with the specifications nondiscriminatorily to all interested third-parties. All three Licensors, however, remain free to license their “essential” patents independently of the Portfolio Licenses, including for uses outside the DVD-ROM and DVD-Video formats.

The licenses from Sony and Pioneer also establish the Portfolio Licenses’ royalty rates. The Player License per-unit royalty is to be 3.5% of the net selling price for each player sold, subject to a minimum fee of $7 per unit, which drops to $5 as of January 1, 2000. The Disc License royalty is to be $0.042 per disc sold. In addition, each Portfolio License requires a $10,000 initial payment, half of which is creditable against the

MPEG-2 video compression technology.
per-unit royalties. Philips’ licenses from Sony and Pioneer separately set the latter two firms’ share of these royalties, again on a per-unit basis. The allocation of royalties among the Licensors is not a function of the number of patents contributed to the pool. To ensure the receipt of their agreed royalties, Sony’s and Pioneer’s independent auditors may audit Philips’ books and records up to once a year.

While each of the Licensors retains sole discretion to pursue infringers, the licenses from Sony and Pioneer require each Licensor to notify the others before initiating any enforcement action and provide for sharing of joint infringement litigation expenses.

2. The Portfolio Licenses

As authorized by its licenses from Sony and Pioneer, Philips’ licenses to disc and player manufacturers will be for use in conformity with the Standard Specifications. However, the Portfolio Licenses will notify potential licensees that all the Licensors are “willing to license their respective patent rights for optical disc manufacturing, whether within or outside of the DVD-Video and DVD-ROM Standard Specifications . . . on reasonable terms and conditions.” They will warn potential licensees that licenses from other intellectual property owners may be necessary for compliance with the formats. A “Most Favourable Conditions” clause will entitle the licensee to the benefit of any lower royalty rate Philips grants to another licensee under “otherwise similar and substantially the same conditions.”

Each Portfolio License will have a term of ten years from the license’s effective date, subject to termination for a limited number of reasons.37 To verify royalties owed and paid, Philips may appoint an independent accountant to audit its licensees’ books and records up to once a year and may require licensees to provide the accountant with additional information for that purpose. The Portfolio Licenses also require licensees to provide, on request, information for review by a patent expert to determine whether a particular product infringes any of the licensed patents and, thus, triggers royalty obligations. The licensees’ obligation to provide information to the independent accountant and patent expert extends only to the information necessary to determine the amount of royalties owed or whether they are owed at all.

One of the grounds on which Philips may terminate a license relates to the licensees’ grantback obligation: Portfolio licensees must grant the Licensors and fellow licensees a license, “on reasonable, non-discriminatory conditions comparable to those set forth herein,” on any patents they own or control that are “essential” to either disc or player manufacture in conformity with the Standard Specifications. As noted above, this obligation is reinforced by Philips’ right to terminate without notice the license of any licensee that, after having refused to grant a Licensor a license on an “essential” patent it owns, sues that Licensor for infringement of that patent.

III. Analysis

As with any aggregation of patent rights for the purpose of joint package licensing, commonly known as a patent pool, an antitrust analysis of this proposed licensing program must examine both the pool’s expected competitive benefits and its potential

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37 Philips or its licensee may terminate the license on 30 days’ notice for the other party’s default. Philips also may terminate for licensee bankruptcy, failure to pay royalties, and without notice in response to a licensee’s lawsuit against any Licensor for infringement of an “essential” patent that licensee owns or controls, after the licensee has refused that Licensor’s request for a license.
competitive hazards. In particular, one expects that a patent pool “may provide competitive benefits by integrating complementary technologies, reducing transaction costs, clearing blocking positions, and avoiding costly infringement litigation.”\textsuperscript{44} At the same time, “some patent pools can restrict competition, whether among intellectual property rights within the pool or downstream products incorporating the pooled patents or in innovation among parties to the pool.”\textsuperscript{45} Accordingly, the following analysis addresses (i) whether the proposed licensing program is likely to integrate complementary patent rights and (ii), if so, whether the resulting competitive benefits are likely to be outweighed by competitive harm posed by other aspects of the program.

A fundamental premise of the following analysis is that the patents to be licensed are valid. This is a legitimate presumption with any patent.\textsuperscript{46} On the other hand, persuasive evidence to the contrary would undermine virtually any licensing arrangement: “A licensing scheme premised on invalid or expired intellectual property rights will not withstand antitrust scrutiny.”\textsuperscript{47} Unaccompanied by legitimate intellectual property rights, restrictions on licensors or licensees are highly likely to be anticompetitive. None of the information that you have provided us warrants abandonment of the presumption of validity as to any of the patents to be licensed.\textsuperscript{48} Should the Department subsequently receive information that undercuts this presumption, its enforcement intentions as to the proposed arrangement might be very different.

A. Integration of Complementary Patent Rights

If the Licensors owned patent rights that could be licensed and used in competition with each other, they might have an economic incentive to utilize a patent pool to eliminate competition among them. A pool that served that purpose “would raise serious competitive concerns.”\textsuperscript{49} In combining such substitute patents, the pool could serve as a price-fixing mechanism, ultimately raising the price of products and services that utilize the pooled patents. If, on the other hand, the pool were to bring together complementary patent rights, it could be “an efficient and procompetitive method of disseminating those rights to would-be users.”\textsuperscript{50} By reducing what would otherwise be

\textsuperscript{44} Department of Justice-Federal Trade Commission, Antitrust Guidelines for the Licensing of Intellectual Property (“IP Guidelines”), § 5.5.


\textsuperscript{47} MPEG-2 Business Review Letter, 9 (citing United States v. Pilkington plc, 1994 Trade Cas. (CCH) ¶ 70,842 (D. Ariz. 1994)).

\textsuperscript{48} At the same time, it is worth noting that the pool does not seem well equipped internally to eliminate any patents whose validity becomes dubious. The proposed arrangement provides no internal screen for catching those patents, either at the outset of the pool or thereafter. The expert’s role, for example, is to assess essentiality, not validity. Nor is there a mechanism for weeding out patents later held invalid. In contrast, the pool established for the joint licensing of patents essential to the MPEG-2 compression standard automatically excludes patents conclusively held invalid or unenforceable. Since the Licensors here are not allocating royalties on a per-patent basis, no Licensor has an incentive to challenge the validity of any particular patent of another.


\textsuperscript{50} Id.
three licensing transactions to one, the pool would reduce transactions costs for Licensors and licensees alike. By ensuring that each Licensor’s patents will not be blocked by those of the other two, the pool would enhance the value of all three Licensors’ patents.

One way to ensure that the proposed pool will integrate only complementary patent rights is to limit the pool to patents that are essential to compliance with the Standard Specifications. Essential patents by definition have no substitutes; one needs licenses to each of them in order to comply with the standard. At the same time, they are complementary to each other; a license to one essential patent is more valuable if the licensee also has licenses to use other essential patents.

A broader inclusion criterion than essentiality carries with it two anticompetitive risks, both arising from the possibility that there may be substitutes for patents included in the pool. Consider, for example, a situation where there are several patented methods for placing DVD-ROMs into packaging—each a useful complement to DVD-ROM manufacturing technology, but not essential to the standard. A DVD-ROM maker needs to license only one of them; they are substitutes for each other. Inclusion in the pool of two or more of those patents would risk turning the pool into a price-fixing mechanism. Inclusion in the pool of one of the patents, which the pool would convey along with the essential patents, could in certain cases unreasonably foreclose the competing patents from use by manufacturers; because the manufacturers would obtain a license to the one patent with the pool, they might choose not to license any of the competing patents, even if they otherwise would regard the competitive patents as superior. Limiting a pool to essential patents ensures that neither of these concerns will arise; rivalry is foreclosed neither among patents within the pool nor between patents in the pool and patents outside it.

If our understanding of the criterion “necessary (as a practical matter)” is correct, then it appears that the Licensors intend to license through the pool only complementary patents for which there are no substitutes for the purposes of compliance with the Standard Specifications. Some uncertainty arises from this definition’s imprecision: Unlike the MPEG-2 pool, which required actual technical essentiality for eligibility, this pool introduces the concept of necessity “as a practical matter.” On its face, this latter standard is inherently more susceptible to subjective interpretation. An excessively liberal interpretation of it could lead to the inclusion of patent rights for which there were viable substitutes. In that event, the pool could injure competition by foreclosing such substitutes.

Based on what you have told us, however, the definition of “necessary (as a practical matter)” that the expert will be employing is sufficiently clear and demanding that the portfolio is unlikely to contain patents for which there are economically viable substitutes. Thus, so long as the patent expert applies this criterion scrupulously and independently, it is reasonable to expect that the Portfolio will combine complementary patent rights while not limiting competition between them and other patent rights for purposes of the licensed applications.

The structure of this pool, however, creates some concern about the expert’s ability to apply this criterion entirely independent of the Licensors. While you have stated that the patent expert will be “independent” and demonstrated that his independence is a term of the licenses from Sony and Pioneer to Philips, the expert is being retained directly by the Licensors, who have an incentive to combine in the pool any of their
competing DVD-related patents and to foreclose others’ competing patents.\textsuperscript{56} Without more, there would be justifiable skepticism that this structure would ensure a disinterested review of the “essentiality” of the patent rights put forward.

However, in furtherance of the provision for independence in the licenses from Sony and Pioneer to Philips, each Licensor has assured the U.S. expert in writing that the expert’s compensation and future retention will not be affected by his determinations as to essentiality; the same assurance will go to the Japanese patent expert as well. These assurances, of course, are no guarantee. Their continuing fulfillment is necessary to the expert’s independence and, consequently, to the likelihood that the portfolio will contain only complementary patents without foreclosing competition. Whether they will be sufficient as well as necessary remains to be seen.

Although the patent-expert mechanism is flawed, the Department is willing to base its present enforcement intentions on your representation that the combination of the Licensors’ contractual commitment to independence and their written assurances to the expert will insulate him from their interests sufficiently to ensure that the Portfolio Licenses will contain only those patent rights of the Licensors that all DVD-Video and DVD-ROM licensees will need. In that case, the proposed arrangement would serve the procompetitive purpose of combining complementary technologies into a package that will be likely to lower costs to makers of DVD-Video and DVD-ROM discs and players. If, nevertheless, these assurances prove insufficient either to ensure the expert’s ability to function independently and objectively or to ensure that the pool will contain only essential patents, the Department’s enforcement intentions as to the proposed arrangement might be very different.

B. Foreclosure of Competition in Related Markets

As mentioned above, the Licensors are competitors in markets vertically related to the licensed technology—not only in “downstream” markets such as the manufacture of DVD discs and players, but also in the creation of content, such as feature-length films, that is incorporated in DVD discs. Consequently, the question arises whether this pool is likely to impede competition in any of those markets, not only between any given Licensor and licensees, but also among the Licensors themselves.

Based upon what you have told us, the proposed licensing program does not appear to have any such anticompetitive potential in the markets in which the licensed technology will be used. First, the agreed royalty is sufficiently small relative to the total costs of manufacture that it is unlikely to enable collusion among sellers of DVD players or discs. Second, the proposed program should enhance rather than limit access to the Licensors’ “essential” patents. Because Philips must license on a non-discriminatory basis to all interested parties, it cannot impose disadvantageous terms on competitors, let alone refuse to license them altogether. Should the agreed pool royalty prove economically unrealistic, each Licensor’s ability to grant licenses on its own to users of the Standard Specifications provides a backstop. Third, the extent of Philips’ ability to

\textsuperscript{56} Because the royalty allocation is unaffected by each Licensor’s share of the patents in the Portfolio License, the Licensors have no financial incentive to exclude each other’s non-essential patents. In the MPEG-2 pool, in contrast, the joint licensor, which retained the expert, was an entity separate from the patent owners with no intellectual property of its own at stake. Moreover, the pool members themselves had a strong incentive to exclude non-essential patents, since their share of the royalties was a direct function of the number of essential patents they held.
audit licensees, through independent accountants, is unlikely to afford it anticompetitive access to competitively sensitive proprietary information, such as cost data. Sony’s and Pioneer’s similarly limited right to an annual audit of Philips’ conduct as joint licensor should not create any greater likelihood of collusion. Nor does there seem to be any facet of the proposed program that would facilitate collusion or dampen competition among the Licensors in the creation of content for software.

C. Effect on Innovation

Because only already-filed “essential” patents and patent applications are required for inclusion in the Portfolio, the program does not discourage the Licensors from continuing research and development that may relate to the standard.58 Further, the Licensors are free to license their “essential” patents for purposes that compete with the DVD-Video and DVD-ROM standards.

Ordinarily, patent license grantback provisions might be expected to raise the question whether, by reducing licensees’ incentives to innovate, they threaten competitive harm that outweighs their procompetitive effects. Here, however, the proposed grantback provisions are so narrow that they are unlikely to raise significant issues. Their scope is commensurate with that of the Licenses: They cover only “essential” patents. A licensee’s non-“essential” improvements remain its own and may be licensed or not, as the licensee wishes. Thus, the grantback obligation seems unlikely to apply to further innovation within the DVD-ROM and DVD-Video formats. Instead, it is far more likely to force cross-licenses, on “reasonable, non-discriminatory conditions comparable to those” of the Portfolio Licenses, from owners of already extant “essential” patents. In requiring licensees to offer the Licensors and fellow licensees access, on reasonable terms, to whatever “essential” patents they own or control, the Portfolio Licenses ensure that no licensee may take advantage of the benefits of the pool while exploiting its own market power over users of the Standard Specifications. The grantback provision is likely simply to bring other “essential” patents into the Portfolio, thereby limiting holdouts’ ability to exact a supracOMPetitive toll from Portfolio licensees and further lowering licensees’ costs in assembling the patent rights essential to their compliance with the Standard Specifications. While easing, though not altogether eliminating, the holdout problem,60 the grantback should not create any disincentive among licensees to innovate.

In the current circumstances, the proposed ten-year term of the license does not pose significant concerns. The Portfolio Licenses authorize only a limited field of use for the licensed technology—the manufacture and sale of products that comply with the Standard Specifications; they do not limit licensees’ other options. Licensees may

58 At the same time, the exclusion of patents with a priority date of December 31, 1996 or later, and those acquired by a Licensor only after November 24, 1997 (October 1, 1997 for Pioneer), could create anticompetitive costs for Portfolio licensees if any Licensor did not honor its commitment to make such patents available at reasonable rates. Transaction costs to licensees would almost certainly be somewhat lower if these later patents were included in the pool, instead of being subject to separate negotiations. However, the fact that this pool might not enable the realization of all potential efficiencies of pooling patents in this area does not mean that the efficiencies that it does create are insubstantial or that the arrangement is anticompetitive or unlawful.

60 Any non-manufacturing owner of an “essential” patent, in contrast, can still be a holdout, having no need for either Portfolio License.
seek presently unknown methods of complying with these standards, or they may support altogether different product standards. The absence of any renewal clause puts potential licensees on notice that they will be facing a new market-based negotiation for access to the technology on the expiration of the Portfolio Licenses ten years hence. The uncertainty of market conditions at that time makes it impossible to speculate on the degree of power, if any, the Licensors will hold over any future technology licensing market.

IV. Conclusion

Based on the information and assurances that you have provided us, it appears that the proposed arrangement is likely to combine complementary patent rights, thereby lowering the costs of manufacturers that need access to them in order to produce discs and players in conformity with the DVD-Video and DVD-ROM formats. Your assurances and information indicate that the proposed arrangement is not likely to impede competition, either in the licensing or development of technology for use in making DVDs, players, or products that conform to alternative formats, or in the markets in which DVDs and players compete.

For these reasons, the Department is not presently inclined to initiate antitrust enforcement action against the conduct you have described. This letter, however, expresses the Department’s current enforcement intention. In accordance with our normal practices, the Department reserves the right to bring an enforcement action in the future if the actual operation of the proposed conduct proves to be anticompetitive in purpose or effect.

This statement is made in accordance with the Department’s Business Review Procedure, 28 C.F.R. ¶ 50.6. Pursuant to its terms, your business review request and this letter will be made publicly available immediately, and any supporting data will be made publicly available within 30 days of the date of this letter, unless you request that part of the material be withheld in accordance with Paragraph 10(c) of the Business Review Procedure.

Sincerely,

/ s / Joel I. Klein