ORIGINAL FILE

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

In the Matter of	)	
	)	
	)	
Advanced Television Systems	)	MM Docket
and Their Impact on the	)	No. 87-268
Existing Television Broadcast Service	)	
Review of Technical and	)	
Operation Requirements	)	
Part 73-e Television	)	
Broadcast Stations	)	
Reevaluation of the UHF Television	)	
Channel and Distance Separation	)	
Requirements of Part 73 of the	)	
Commission's Rules	)	

COMMENTS OF NHK - TO THE TENTATIVE DECISION
AND FURTHER NOTICE OF INQUIRY

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NHK's Comment on FCC Tentative Decision and

Further Notice of Inquiry

NHK applauds the FCC's first step toward the realization of ATV by making this tentative decision.

In this context, we think that special consideration should be given to the following points when introducing the terrestrial broadcast of ATV.

(1) Picture quality

(2) Technological feasibility

(3) Economic efficiency

(4) Competitiveness with other media

The three of four systems of terrestrial broadcast ATV proposed by NHK can meet the diverse conditions for the realization of ATV in the U.S. They clearly show a difference in picture quality due to the presence of compatibility, the range of RF bandwidth, and the complexity of equipment. These three systems are listed as follows:

(1) 6 MHz Simulcast System (Narrow-MUSE)

* 6MHz RF bandwidth
* Improved picture quality -vs- NTSC

* 4-channel digital audio signals

(2) 6 MHz NTSC Compatible System (NTSC-Compatible-MUSE-6)

* Both NTSC and 6MHz compatible
* Twice NTSC static resolution
* 2-channel digital audio signals

(3) 6+3 MHz Augmentation System (NTSC-Compatible-MUSE-9)

* Compatible with NTSC and MUSE-6 system
* 3MHz augmentation channel for improved moving resolution
* Twice NTSC static resolution
* 4-channel digital audio signals

NHK will continue to cooperate with the U.S. as that country considers its ATV system.

NHK's Comment on Specific Items of FCC's Tentative

Decision and Further Notice of Inquiry

Paragraph 4, Item 3 says :

> "We also tentatively conclude that any spectrum capacity needed for broadcast ATV system will be obtained from the spectrum now allocated to broadcast television. In the interests of efficient use of the spectrum and minimization of disruption to other services, we do not intend to consider the use of any frequency bands not already allocated for television terrestrial broadcasting."

Our comment is as follows :

This is a reasonable decision taking into consideration the effective utilization of frequency resources. However, it may be necessary to consider whether ATV terrestrial broadcasting is able to compete with ATV through other media (e.g. satellite, cable, package video) in picture quality on this condition. In the case that it does not have adequate competitiveness, there may be a need to re-examine utilizing certain portions between 1 - 13 GHz band.

Paragraph 4, Item 4 says :

> "We find that existing service to viewers utilizing NTSC receivers must be continued irrespective of the actual manner in which ATV services are delivered, at least during a transition period. This can be accomplished either by transmitting ATV signals that can be received directly by NTSC receivers or by simulcasting NTSC and incompatible ATV signals on separate channels."

Our comment is as follows :

NHK shows its respect to the FCC's decision that the 6+6 MHz simulcasting is a candidate for terrestrial ATV services. Based on our experience in system development it can be said that it is advisable to consider the simulcasting of an incompatible 6MHz system, as a way of continuing NTSC service in a transition period.

Paragraph 4, Item 5 says :

> "Our strong predisposition to require NTSC receiver compatibility and the scarcity of suitable spectrum within the existing allocations lead us to conclude that systems requiring more than 6MHz to broadcast a non-compatible signal, such as the MUSE HDTV 9MHz system, will not be authorized for terrestrial broadcast service."

Our comment is as follows :

When high-quality HDTV services are offered through media other than terrestrial broadcasting, it is questionable whether an NTSC compatible ATV terrestrial broadcast, which would come about under those conditions specified in Items 3 and 4, could compete with them.

Paragraph 4, Item 6 says :

> "We find it in the public interest not to retard the independent introduction of ATV in other services or on non-broadcast media, but we are sensitive to the benefits of compatibility between equipment associated with the various video delivery methods."

Our comment is as follows :

It is desirable that terrestrial ATV systems have compatibility with other media.

Paragraph 5, Item 2 says :

"We seek additional information on ATV systems being designed for terrestrial broadcast service, including the feasibility of their operating under the interference limitations indicated by studies of the VHF and UHF spectrum."

Our comment is as follows :

At present, NHK is making experimental hardware for NTSC and/or 6MHz compatible terrestrial broadcast ATV systems. When this hardware is completed, the protection ratio will be measured and will be reported to the FCC.

Paragraph 5, Item 3 says :

"Within the existing allocations, we believe that our options to accommodate ATV are: (a) provide ATV within existing 6MHz assignments; (b) provide to each broadcaster an additional 3MHz for an augmentation signal; or (c) provide to each broadcaster an additional 6MHz for either an augmentation signal or for a dual non-compatible ATV signal. We are particularly interested in comment on the advantages and disadvantages of these options."

Our comment is as follows :

(1) 6MHz NTSC Compatible System

Advantage: There is no need to reallocate the spectrum.

Disadvantage: Since this system's picture quality (especially motion picture quality) is not high, it is important to determine by physical measurements and subjective assessments whether the system can compete with true HDTV non-terrestrial broadcast systems. Moreover, the system's receiving apparatus has a more intricate structure, due to sophisticated signal processing, than NTSC incompatible systems.

(2) 6+3 MHz Augmentation System

Advantage: This system's picture quality is better than the 6 MHz compatible system's. Also, the introduction of digital audio is easier.

Disadvantage: The two-channel system requires two RF systems, and its receiving apparatus has a more intricate structure. Some measures to correct a difference in gain and delay between two channels becomes necessary.

(3) 6+6 MHz Augmentation System

Advantage: This system's picture quality is better than the 6+3 MHz augmentation system's.

Disadvantage: The two-channel system requires two RF systems, and its receiving apparatus has a more intricate structure. Some measures to correct a difference in gain and delay between two channels becomes necessary. Spectrum requirements are greater than 6 MHz NTSC compatible or 6+3 MHz augmentation system.

(4) 6+6 MHz Simulcast System

Advantage: Among the four systems, this system may offer a higher picture quality due to no NTSC restriction. In addition, as ATV spreads, it enables one to discontinue NTSC and shift to ATV. In this sense, spectrum is effectively utilized.

Disadvantage: Initially this system requires more spectrum than 6 MHz NTSC compatible or 6+3 MHz augmentation system.

Paragraph 10 says :

> "On June 16, 1988, the Advisory Committee submitted an Interim Report containing recommendations on the fundamental parameters and spectrum requirements for ATV. The attributes and spectrum requirements of proposed ATV systems and the planned future work of the Advisory Committee are discussed in the Interim Report. The Advisory Committee concludes in the Interim Report that to remain competitive, broadcasters must have the opportunity to deliver HDTV-quality signals to their audiences, and that therefore efforts should be focused on establishing an HDTV standard for terrestrial broadcasting. The Advisory Committee states in the Report that at the present stage of technical development, channels of more than 6MHz are necessary to transmit HDTV signals competitive in quality to those that will be offered by the non-broadcast media, and that therefore efforts also should be focused on determining the availability of spectrum."

Our comment is as follows :

We agree with the views of the Advisory Committee Interim Report. When the FCC gives consideration to the picture quality which may be achieved by the terrestrial ATV broadcast systems based on this tentative decision, and if it decides that the picture quality cannot compete with other media's HDTV, then it may wish to reconsider new frequency band(s) in certain portions of the 1 - 13 GHz spectrums for terrestrial broadcast of HDTV.

Paragraph 14 says :

> "The Advisory Committee concluded that sufficient spectrum capacity might be available within the existing VHF/UHF allocations for either the augmentation or simulcast approach, provided that (1) all the UHF "taboos" can be disregarded in the ATV environment, and (2) ATV systems can successfully operate with co-channel and adjacent channel interference protection that is less than that required by NTSC operation. The Advisory Committee stated that additional spectrum outside the existing broadcast allocations will have to be considered if these two conditions cannot be met. The Advisory Committee also stated that no attempt should be made to retard the introduction of ATV by other non-broadcast means (such as

by videocassette recorder or cable) while the necessary studies and analyses proceed, but recognized that problems may arise if the introduction of equipment for these other media result in the establishment of a de facto transmission standard that is not conductive to broadcast transmission. In order to accommodate the possibly different transmission standards of different media, the Committee suggested that attention be focused on development of inexpensive interfaces or receivers capable of accommodating different reception standards."

Our comment is as follows :

When discussing the issue of frequency allocation, it is necessary to build actual hardware for each type to measure the protection ratio using actual hardware. NHK will cooperate in this effort.

It is hoped that there will be a compatibility or convertibility between ATV systems of terrestrial broadcasting and other media including satellite, cable and package video. It is likely that this can be realized by simulcasting.

Paragraph 21 says :

"Also, there has been considerable discussion within the CCIR, the United States, and other countries concerning international agreement on a single world-wide HDTV production standard. Within the United States, the Advanced Television Systems Committee (ATSC) and the Society of Motion Picture and Television Engineers (SMPTE) have approved as a voluntary HDTV production standard an interlaced scanning standard based upon 1125 lines and 60 fields per second. Several European countries have proposed a progressive scanning system based upon 1250 lines and 50 fields per second. While national and international efforts at production standardization are outside the scope of this proceeding and indeed outside of our jurisdiction, in considering the various proposed ATV systems the availability of programs and their compatibility with various production standards are relevant to the overall quality and likely success of specific systems. Converting from a production source to a transmission source introduces a number of factors that might result in certain systems producing better

results with one or another of the available program sources, and this is relevant to our consideration of the systems. Therefore we solicit information on the program signal formats that are to be utilized by the various system proponents. In addition, we request comment on the compatibility of the various systems with 35mm film standards, the proposed 1125/60 standard, the European 1250/50 proposal, and any additional production standards."

Our comment is as follows :

It is not advisable to use more than one production standard because of the cost of equipment and program exchange. The 1125/60 production standard, which has been approved by ATSC and SMPTE, can be used as a signal source for all proposed ATV systems including those compatible with NTSC. The 1125/60 production standard can be widely applied not only to broadcasting but to production of movies, printing and industrial purposes. Telecine equipment has already been developed. 35 mm film can also be used for the ATV signal source.

Paragraph 35 says :

"NHk also has developed an additional compressed version of MUSE called Narrow-MUSE that can be transmitted in a single 6MHz channel. While this system does not perform as well as MUSE HDTV, NHK states that Narrow-MUSE does perform better than either of the NTSC compatible MUSE systems. Narrow-MUSE has been demonstrated by computer simulation."

Our comment is as follows :

Narrow-MUSE has a better picture quality than the NTSC compatible systems. NHK will complete hardware developing for the system by the end of this year. The encoder and decoder of the Narrow-MUSE system are achieved by putting a few additional circuits in an encoder and decoder of the MUSE

system, which means there is a compatibility between the two systems.

Paragraph 39 says :

> "On the basis of the comments received, we conclude that broadcast stations provide services unique in the array of entertainment and non-entertainment programs freely available to the American public. Unlike many other countries, the United States has a strong and independent system of privately-owned and operated broadcast stations that transmit local and regional news, information, and entertainment as well as national and international programs. Therefore, initiating an advanced television system within the existing framework of local broadcasting will uniquely benefit the public and may be necessary to preserve the benefits of the existing system. Also, we believe that the benefits of these new technological developments will be made available to the public in the quickest and most efficacious manner if existing broadcasters are permitted to implement ATV. We emphasize that this decision does not foreclose provision of ATV services by other means, both those that use spectrum and those that do not. Thus, we conclude that broadcasters should be permitted to utilize ATV transmission techniques within the existing VHF and UHF bands to the extent that this use can be accommodated and that continued broadcast service to the public is not disrupted, including service to those viewers with NTSC standard receivers."

Our comment is as follows :

Before ATV service on the existing terrestrial broadcasting is started, thorough consideration should be given to whether it can secure comparable picture quality to HDTV via other media. As previously mentioned, it is our opinion that simulcasting provides the highest quality.

Paragraph 40 says :

> "In this section we consider the possibilities for providing additional spectrum to implement ATV service. In particular, we address the requirements of the various proponent ATV systems, the advantages and disadvantages of the options, and the region of the spectrum best suited for

supplemental allotments. Most parties agree that the technical quality of broadcast signals increases with bandwidth, but the quality desired by the public and the "optimum" quality, given the complex tradeoffs, are far from certain."

Our comment is as follows :

When developing HDTV, NHK first considered the picture quality required and, based on the results, decided to select the 1125/60 system. The picture quality of the 1125/60 system attains a fully satisfactory level at a viewing distance of three times the picture height. We believe that the picture quality of the 1125/60 system should be the picture quality objective of ATV systems. NHK is developing hardware in order to show the level of picture quality related to bandwidth and NTSC compatibility.

Paragraph 42 says :

"Most broadcasters state that it is too early to decide whether 6MHz is enough bandwidth to support ATV service of sufficient quality to compete with the full HDTV quality that might be delivered by other media, and argue that additional testing is necessary before a decision can be made on bandwidth. Cap. Cities/ABC argues that existing knowledge is insufficient to determine the bandwidth necessary to provide competitive quality, and concludes that before bandwidth decisions are made more knowledge is needed on the technical possibilities and the likely response of the public to degrees of change in aspect ratio, resolution, and other characteristics."

Our comment is as follows :

According to the findings of the R & D activities conducted by NHK, picture quality of ATV transmittable within a single 6MHz channel is inferior to true HDTV's. This occurs particularly in moving pictures rather than still pictures. It is necessary to verify through hardware testing

whether ATV services provided within 6 MHz bandwidth can compete with HDTVs that might be provided by other media.

Paragraph 82 says :

> "We intend to analyze ATV spectrum plans in terms of accommodating as many existing broadcasters as possible and encouraging the most intensive and efficient use of the spectrum. In view of the opportunity costs associated with spectrum used for ATV service, our preference is for ATV systems that can provide satisfactory service using the least spectrum. Because spectrum available for ATV use in the VHF and UHF broadcast bands is limited, we tentatively have concluded that we will consider only those plans that would use 6MHz or less of additional bandwidth per station. Even if it were possible to eliminate or substantially relax the UHF taboos in an ATV environment and ATV receivers could handle signals with lower D/U ratios, authorization of supplemental spectrum in excess of 6MHz would be undesirable because it would limit the number of stations that could be accommodated. Another element of our tentative decision is to maintain service to existing NTSC receivers, at least through a transition period, and therefore we do not intend to authorize ATV service that would result in a reduction to NTSC service. We propose requiring licensees to transmit an ATV signal that is compatible with NTSC receivers or to simultaneously transmit NTSC and ATV signals on dual channels. Therefore, any NTSC incompatible system that uses more than 6MHz, such as the MUSE HDTV system, would not be a candidate for authorization. We invite comment on these tentative decisions."

Our comment is as follows :

Creating as many ATV broadcasting stations as possible is desirable for the proliferation of ATV and, for this reason, the tentative decision not to allow an augmentation system or simulcasting requiring more than an additional 6MHz for the broadcast station is understandable. Based on NHK's system development experience, we believe that a 6MHz incompatible simulcast system will provide terrestrial broadcasters the highest possible quality within the parameters established by this tentative decision.

Footnote 106 says :

> "This conclusion is limited to VHF and UHF terrestrial broadcast television. We reiterate that nothing in this Further Notice is intended to suggest that we might restrict licensees in other services, such as DBS, from transmitting ATV signals with bandwidth of more than 6MHz."

Our comment is as follows :

We support the FCC in not making any particular stipulations concerning ATV used by other media (satellite, for example). However, as much conformity as possible between ATVs by terrestrial broadcasting and by other media is desirable for the proliferation of ATV in the future.

Paragraph 84 says :

> "Limitation of ATV systems to the 6MHz bandwidth currently provided for television channels effectively would require that ATV systems be fully compatible with the NTSC system. As discussed in the comments and the economic analysis of the Advisory Committee, compared to other ATV alternatives, a 6MHz compatible ATV system is expected to have only a relatively small economic impact on broadcasters, cable operators and consumers. Such a system would not require broadcasters to replace or add transmitters, nor would it require cable operators either to expand channel capacity or to discontinue any existing service. Existing receivers would be unaffected by the new signals and new ATV receivers would be able to process either NTSC or ATV signals. Limitation of ATV service to the existing 6 MHz channel also would permit future assignment of additional full service television stations, would not displace LPTV and TV translator stations that operate on a secondary basis, and might provide opportunity for additional non-broadcast use of the UHF band."

Our comment is as follows :

Based on our experience developing an EDTV system with BTA (Broadcasting Technology Association) in Japan, we find that in order for a 6MHz NTSC compatible ATV system to offer the highest possible picture quality, it must first enhance

the picture quality of signal sources at the broadcasting station. Consequently, high quality studio facilities are required. To enhance the picture quality, new encoders, which are capable of adding additional information at the transmitter site, will be necessary, while conventional transmitters can be used. Therefore, new facilities should be introduced to broadcast stations despite whether an NTSC compatible or incompatible system is employed.

With regard to ATV receivers, complicated signal processing is necessary to attain as high a picture quality as possible within the restrictions of compatibility with NTSC system. In terms of the complexity of the receiver, an NTSC compatible ATV receiver is even more complicated than an incompatible one, with consequent impact on the receiver cost. In addition, because of the multiplexed additional signals such as high frequency components, a 6 MHz NTSC compatible ATV might cause the degradation to picture quality of the existing NTSC receivers.

It is often said that an NTSC compatible ATV system can realize ATV service on an economic basis, but we do not necessarily think this is the case when the highest possible picture quality is required.

Paragraph 85 says :

> "As was the case with color television, broadcasters' use of new, fully compatible technology likely would encourage the development and marketing of new receivers. High demand for ATV receivers, which reasonably could be expected with a fully compatible system, would allow manufacturers to quickly achieve economies of scale in

production that would lead to lower prices for consumers. The availability of ATV programming for broadcasters and sales of ATV receivers likely would accelerate as broadcast stations and cable systems implemented ATV hardware. Thus, we believe that the transition to ATV might occur more rapidly than otherwise if a 6MHz NTSC compatible ATV transmission option were implemented."

Our comment is as follows :

Complicated signal processing will be required for a 6MHz NTSC compatible ATV receiver in order to improve the picture quality within the restrictions of compatibility with the NTSC system. So, in terms of the cost, it could become more expensive than an incompatible ATV receiver and actually slow down the proliferation of the 6MHz NTSC compatible ATV.

Paragraph 86 says :

"We recognize that the quality of ATV service that could be provided with a 6MHz system may not be as high as that which might be possible with other system designs that use more bandwidth. At this point, the degree of qualitative improvement associated with systems that use greater bandwidth and the value consumers place on these improvements is not known. Thus, it is not clear whether broadcasters can remain competitive in the long run with the service quality attainable through a 6MHz NTSC compatible ATV system."

Our comment is as follows :

Particularly problematic in terms of the picture quality of a 6MHz NTSC compatible ATV system is the quality of moving pictures. Even if improvements in the resolution of still pictures can be achieved, improvements in the resolution of moving pictures will be difficult to accomplish.

In terms of the system design, it is important to draw a balance between the quality of still pictures and moving

pictures. For this reason, even if the resolution of still pictures is improved, the system might not necessarily be superior overall.

Paragraph 87 says :

> "Under the 3MHz supplemental spectrum approach, an additional, not necessarily contiguous, augmentation channel would be authorized for ATV signals. A station would continue to transmit NTSC signals on its primary channel, and the 3MHz augmentation channel would be used only by ATV receivers. The primary desirable feature of this approach is that it likely would provide better ATV quality and facilitate an orderly transition to ATV service by maintaining compatibility with NTSC receivers. As indicated by the OET spectrum study, it also appears that a 3MHz spectrum plan could accommodate more stations than a 6MHz plan."

Our comment is as follows :

The picture quality of an NTSC compatible ATV system using a 3MHz augmentation channel is an improvement over the picture quality of a 6MHz NTSC compatible ATV. Improvements made in the picture quality will mainly center around expansion of the resolution of the moving pictures. The number of digital audio channels can be increased.

With 6 + 6 MHz or 6 + 3 MHz dual channel systems, it is necessary to use an automatic equalizer, to compensate the difference between the signal level of the main channel and augmentation channel and the delay difference. Without this equalizer, the picture quality becomes inferior.

Paragraph 89 says :

> "Authorization of a supplemental 6MHz would result in two possible ATV implementation scenarios. One would be to

transmit augmentation signals. The advantage expected over a 3MHz system would be greater improvement in service quality. The disadvantages of employing augmentation spectrum described above also apply. The other approach would be to use the 6MHz to broadcast in tandem the signal of an independent, incompatible ATV system with the NTSC signal on the station's primary channel. This might be desirable because after a transition period broadcasters could shift ATV transmissions to their primary channel and abandon NTSC transmissions if ATV receivers have sufficiently penetrated the market. Ultimately this would allow broadcasters to restore service areas to those under the existing allotment system. While we would expect broadcasters eventually to convert to ATV service, this option also would allow them to cease transmitting ATV service and continue to transmit NTSC service if sufficient demand for ATV does not develop. This process might be a way to implement ATV service relatively quickly with technical advantages that might be obtained from a system that need not be compatible with the NTSC system. If there were continuing demand for both NTSC and ATV service, broadcasters might operate both indefinitely. However, that would eliminate the spectrum efficiency benefit of ultimately regaining one of the two 6MHz channels for other use. Parties addressing the simulcast approach are asked to comment on the likelihood of this occurring and its implications for spectrum efficiency."

Our comment is as follows :

In the case of ATV service by simulcasting, it is thought that as the penetration of ATV receivers increases with time, the cost of ATV receivers will decrease significantly and that demand for the continuation of NTSC broadcasting will decrease. In addition, when programs are made based on the production standards with the aspect ratio of 16:9, it is sometimes difficult to pass on the production aims of the producer to a 4:3 NTSC screen. Eventually this may also erode the demand for NTSC simultaneous broadcasting. Consequently, it may be possible to stop NTSC broadcasting at an appropriate time.

Paragraph 94 says :

> "We intend to conclude our technical analyses quickly, to develop a variety of channel assignment plans, and to present these plans for public comment as expeditiously as possible. At this juncture, we see little benefit in differing spectrum decisions until we reach a decision on technical standards issues. We see benefits to proceeding rapidly. Inasmuch as the present allotments limit the amount of spectrum capacity available for assignment, proposing band plans early in the process will identify real design constraints that may both narrow the number of systems under consideration and assist system designers to develop ATV formats that can be used under actual broadcast conditions. Also, determining whether there will be supplemental assignments and, if so, the viable set of such assignments may permit relaxation of our freeze on television allotments and assignments."

Our comment is as follows :

The picture quality and transmission features of ATV systems should be tested with the actual hardware. The Commission may wish to re-evaluate its tentative decision in the light of the test results.

Paragraph 95 says :

> "In summary, we request comment on the availability and use of spectrum for ATV as discussed above. In addition to our tentative conclusions, parties should address any other relevant issues involving spectrum availability and use."

Our comment is as follows :

By utilizing the actual hardware of the ATV systems, various data will be attainable, including those for protection ratios. When this data differs from the parameter values used for the calculation of Table 1 and Table 2, it would be desirable to carry out calculations again according to the parameter values obtained through the experiments and to predict the possible number of stations which can be allocated spectrum.

Paragraph 122 (2) says :

> "Is our judgment correct that it is too early to adopt transmission standards? How should we determine the appropriate time to establish an ATV standard if we decide to do so? If parties agree that it is too early, we ask for comments and suggestions concerning benchmarks by which we might determine when it would be appropriate to adopt standards."

Our comment is as follows :

It is likely that HDTV will be introduced early by the other media. The development of ATV is also progressing. Consequently, efforts to standardize should be continued.

Paragraph 122 (3) says :

> "What reasons are there to expect that, in the case of ATV, an industry de facto standard will become established in the absence of Commission action? What is the likelihood that a de facto standard will be the most desirable choice? Under what circumstances, if any, might a de facto standard fail to serve the public interest? What might the consequences be? "

Our comment is as follows :

The introduction of HDTV in media other than terrestrial broadcasting is possible from a technological standpoint and there is the possibility that it will be introduced early on. Therefore, a de facto standard for non-terrestrial broadcast might be established. In the case of terrestrial broadcasting of ATV systems other than 6MHz NTSC compatible ATV system, spectrum allocation considerations make a de facto standard unlikely. Whether the non-broadcast systems become a de facto standard depends upon the desirability of the program service offered to consumers by those services.

Paragraph 134 (1) says :

> "Is compatibility among media using ATV signals in the public interest? What are the advantages and disadvantages of compatibility? "

Our comment is as follows :

Compatibility among media is important because of the impact on the cost of the receiver. Using systems which offer as much compatibility among the media as possible without inviting a increase in the receiver costs should be considered so that the best picture quality can be obtained for each medium.

Respectfully Submitted,

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