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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of	)	
	)	
Advanced Television Systems	)	MM Docket No. 87-268
and Their Impact Upon the	)	
Existing Television Broadcast	)	
Service	)	

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REPLY COMMENTS OF GENERAL INSTRUMENT CORPORATION

General Instrument Corporation ("GI") submits these reply comments in response to comments submitted in the Fourth Further Notice of Proposed Rulemaking and Third Notice of Inquiry ("NPRM"), FCC 95-315, released August 9, 1995.

GI's reply comments address two issues:

- Broadcasters should be required to transmit some minimum amount of high definition programming; this will resolve the "chicken and egg" problem common to new technologies, promote consumer confidence and allow faster recovery of the NTSC channels; and
- ATV technical standards for cable TV are neither needed nor appropriate.

High Definition Programming

What is most striking about the comments filed in this proceeding is the widespread agreement among virtually all parties that broadcasters either will or

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should transmit some high definition programming. The consensus reflected in this proceeding may puzzle some who have been recently treated to a steady and uninformed drumbeat of stories in the media about the death of HDTV. It will come as no surprise, however, to the many institutions and individuals that have been involved for over nine years in the processes established by the Commission and the Advisory Committee on Advanced Television Service ("ACATS").

That the consensus has remained focused on HDTV over that long period of time is testament to the wisdom of the course set by the Commission. The ACATS program has accelerated the development of digital video, opened the door to multimedia, and helped American industry maintain its technological leadership. We urge the Commission to maintain its focus and complete the process needed to establish a new technical standard which will make broadcast television as relevant over the next fifty years as it has been over the last half century.

Most parties also support an FCC requirement for some minimum amount of HDTV programming. This includes most broadcasters (e.g., Cap Cities/ABC, NBC, CBS, Golden Orange Broadcasting) and virtually all other parties who join in agreement that there should be a requirement for some minimum number of hours per week of HDTV programming.

GI believes that a requirement for a minimum number of hours of HDTV broadcast will produce public interest benefits that will speed the transition to ATV. The return of the NTSC channels can be accelerated by promoting consumer confidence and encouraging consumer purchases of new ATV receivers.

There is general agreement that the NTSC spectrum should not be recovered until a preponderance of U.S. homes are able to receive ATV television broadcasts. But the "chicken and egg" problem that is common to new technologies could slow the penetration of HDTV receivers. Consumers will be more likely to invest in new digital HDTV receivers if the FCC declares an HDTV requirement for broadcasters, so that consumers will be certain that they will have HDTV programming to receive. Then, consumer electronics retailers can commit the resources necessary to educate consumers. In the absence of an FCC requirement for HDTV, consumers will be more reluctant to invest in new HDTV receivers because they will not have the assurance that HDTV programming will be available.

We believe that the public interest benefits, the technological advancement of free, over-the-air broadcasting and the prompt recovery of NTSC spectrum, justify FCC intervention. A minimal requirement for a few hours per week of HDTV broadcast programming will stimulate consumer investment in wide screen HDTV receivers, lead to faster recovery of NTSC spectrum, and help preserve broadcast television.

ATV Technical Standards for Cable Systems

The National Association of Broadcasters has proposed that the FCC should mandate the Advanced Television Systems Committee (ATSC) digital ATV standard for cable TV distribution of ATV signals.

Such a proposal should not be adopted for several reasons:

- The Grand Alliance system was carefully designed to assure interoperability;
- Multi-standard ATV receivers will be economically feasible;
- The ATSC digital ATV standard does not explicitly cover cable TV;
- Other standards organizations are developing cable TV standards; and
- A separate proceeding will deal with technical standards issues.

The Commission's Advisory Committee process gave careful consideration to HDTV interoperability between and among different video distribution media. We believe that the goal of interoperability was achieved in the Grand Alliance system design, both for HDTV and for standard definition digital video. The Grand Alliance system, while intended primarily for over-the-air broadcasting, is also fully compatible and interoperable with cable TV, MMDS, satellite and telephone company distribution of digital video.

However, it was widely recognized that different transmission media will require different tuners and other receiver equipment components. This is because optimal use of various media and differences in frequencies will require different modulation methods and other transport specifications. Satellite systems, for example, will operate at microwave frequencies and use Quadrature Phase Shift Keying (QPSK) modulation. MMDS systems will also operate at microwave frequencies, but evidently will use Quadrature Amplitude Modulation (QAM) modulation. Telephone company networks may well employ Asynchronous Transfer Mode (ATM) packets as a transport specification. And cable TV systems, as can be seen from the significant investment that has already been made , will

employ QAM modulation. Over-the-air broadcasting is the only distribution medium that will use Vestigial Sideband (VSB) modulation. The ATSC digital ATV standard uses only VSB, not QAM, for digital video delivery. However, the Electronic Industries Association (EIA) has reported that "consumer electronics manufacturers can readily—and economically--manufacture television receivers capable of receiving both QAM and VSB signals...." Comments of EIA, p. 12.

This diversity of modulation types simply reflects the principle that each video distribution medium should be allowed to optimize its system design, in order to provide the highest quality and maximum capacity that is technically and economically feasible. To arbitrarily require cable systems to use the ATSC specification, which does not include QAM, would be contrary to that principle. This is particularly true in light of the cable industry's two year lead in deployment of QAM digital video technology over deployment of VSB by the broadcasting industry.

The ATSC standards work does not explicitly cover cable TV standards. The ATSC set out to document the digital HDTV Grand Alliance system, in response to a request from ACATS. That work covers both a broadcast TV specification for a 24 Mbit/sec signal and a high data rate specification for a 38 Mbit/sec signal. Early in the ATSC efforts, the high data rate mode was considered for cable TV use. But there was never any effort by ATSC to evaluate or consider other specifications for cable TV use, nor to limit cable systems in the ATV specifications they could employ. To assure there was no confusion on this point, the ATSC explicitly removed any cable TV designation from the 38 Mbits/sec specification.

Consequently, the ATSC 38 M bit/sec specification may be used by cable systems, or other media, but other specifications may be used as well.

Cable systems should not be constrained to merely pass through the broadcast ATV signal. They should be permitted to repack it in order to take advantage of the higher data rate that can be achieved on a 6 MHz cable channel as compared to a 6 MHz broadcast channel. For example, cable systems may be able to carry two live sports HDTV programs or one HDTV plus several standard definition programs in 6 MHz. If this involves repacking two ATV broadcast channels into a single 6 MHz cable channel, this should be permitted.

Moreover, we note that the ATSC is not the only standards body that is working on digital video standards. In fact, other standards bodies including ITU-T and DAVIC are explicitly considering cable TV specifications. For example, the ITU-T has adopted recommendations for digital video on cable TV systems. (ITU-T Recommendation J.83, Digital multi-programme systems for television, sound and data services for cable distribution, adopted October 1995, publication scheduled January 1996.) In the course of this activity, QAM has gained widespread international acceptance as the standard for cable television transmission. In light of this work underway, it is inappropriate for the Commission to undertake any action on cable TV ATV standards.

Finally, we note that this is not even the proper proceeding to deal with ATV standards issues. ACATS has only recently completed its work and submitted its recommendation on ATV technical standards. The Commission will issue a separate

Notice of Proposed Rulemaking to evaluate and adopt the recommendation, and to consider other technical standards matters.

Conclusions

In light of these considerations, GI urges the Commission to adopt some minimum HDTV broadcasting requirement, and to reject consideration of cable TV ATV standards issues.

Respectfully submitted,

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January 22, 1996