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

In the Matter of	)	
	)	
Review of the Commission's	)	
Rules and Policies	)	MM Docket No. 00-39
Affecting the Conversion	)	
To Digital Television	)	

SECOND REPORT AND ORDER
AND
SECOND MEMORANDUM OPINION AND ORDER

Adopted: August 8, 2002 Released: August 9, 2002

By the Commission: Chairman Powell, Commissioners Abernathy and Copps, with Commissioner Martin dissenting and Chairman Powell, Commissioners Abernathy, Copps and Martin issuing statements

TABLE OF CONTENTS

I. INTRODUCTION

1. By this action, the Commission is resolving several issues raised in the *Report and Order and Further Notice of Proposed Rule Making* (*Report and Order/Further Notice*) in this proceeding with respect to broadcast digital television (DTV) receiving equipment and technical

standards.[1] First, we are amending our rules to require that new broadcast television receiving equipment include the capability to receive DTV signals. This requirement will be phased in over time to avoid imposing undue costs on manufacturers or consumers and to minimize any disruption of the TV receiver market. We are taking this action to ensure that: 1) consumers are provided the capability to receive broadcasters' digital TV signals just as they have been provided the capability to receive analog TV signals; 2) the intent of the 1962 All Channel Receiver Act (ACRA), as codified at Section 303(s) of the Communications Act of 1934, as amended,[2] is fulfilled; and 3) the transition of the broadcast television service from analog to digital transmission technology can progress as smoothly and rapidly as possible towards the target completion date set forth in the Communications Act.

2. We also are: 1) amending our rules to reference the most recent version of the Advanced Television System Committee's (ATSC) DTV standard and to include the ATSC's "Program System and Information Protocol" (PSIP) specification as a document that licensees may consult for guidance; 2) refraining at this time from adopting labeling requirements for TV receivers that are not able to receive any over-the-air broadcast signals; and 3) denying a petition for reconsideration requesting that we consider imposing minimum performance thresholds for DTV receivers if manufacturers do not promptly implement performance standards on their own. These actions, which address the remaining issues in our first review of the DTV transition, will provide necessary updates to our technical rules and remove uncertainties for broadcasters and equipment manufacturers. We also recognize the benefits for broadcasters and consumers of the service features offered by the ATSC PSIP specification and will address the possible adoption of this specification into the rules in the Notice of Proposed Rule Making in our forthcoming Second Review of our policies for the DTV transition.

II. BACKGROUND

3. In the *Fifth Report and Order* in the DTV proceeding, the Commission stated that it intended to conduct periodic reviews of the progress of the conversion to digital television and to make such mid-course corrections as were necessary to ensure the success of that conversion.[3] We commenced this proceeding, the first periodic review, on March 6, 2000, with a *Notice of Proposed Rule Making* (*Notice*) that invited comment on a number of issues essential to resolve

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[1] *Report and Order and Further Notice of Proposed Rule Making* in MM Docket No. 00-39, 16 FCC Rcd 5946 (2001). In the *Memorandum Opinion and Order* (*MO&O*) in this proceeding, we indicated that the proceeding was terminated. However, therein we also indicated that the *Report and Order/Further Notice* in this proceeding raised several major technical issues that were not resolved in the *MO&O* and that would be resolved in a separate Report and Order. *See Memorandum Opinion and Order* in MM Docket No. 00-39, *16 FCC Rcd 20594 (2001)*, para. 2. Accordingly, we are correcting the inadvertent closing of this proceeding in the *MO&O* and are addressing the outstanding technical issues in this docket herein.

[2] All Channel Receiver Act of 1962, P.L. No. 87-529, 76 Stat. 150 (codified at 47 U.S.C. 303(s)).

[3] *Fifth Report and Order* in MM Docket No. 87-268, 12 FCC Rcd 12809 (1997) ¶ 41.

if the transition was to progress.[4] These issues concerned station services areas, selection of post DTV channels, resolution of mutually exclusive DTV and DTV/NTSC applications, and several technical subjects.

4. In the *Report and Order/Further Notice* resolving those issues, we also recognized that a number of the commenting parties, principally entities representing broadcast interests, had raised questions and concerns relating to DTV reception capability in television receivers.[5] In response to these concerns, we proposed to require that new television receivers have the capability to demodulate and decode over-the-air DTV signals by a date certain. We sought comment on how to best implement such a requirement, including alternatives for phasing in DTV reception capability in a manner that would minimize costs for both manufacturers and consumers.

5. In comments responding to the *Notice*, the ATSC indicated that its "ATSC DTV standard A/53," most of which was adopted by the Commission in 1996 as the U.S. broadcast DTV transmission standard, has been updated.[6] The ATSC therefore requested that we revise the rules to reference the most recent version of the ATSC DTV Standard A/53. It further indicated that it has developed a PSIP specification for digital television (ATSC Doc. A/65) and asked that we require broadcasters to transmit PSIP information using the A/65 specification. In the *Report and Order/Further Notice*, we indicated that an industry administered system is the best approach for managing the implementation of a PSIP system. However, we also recognized that the transport stream identifiers (TSIDs) used in the PSIP system must be unique to each individual television station and that there is a need to coordinate TSID assignments for stations in the border areas with our neighbors in Canada and Mexico. We therefore agreed that TSID assignments should be made part of the Commission's licensing process for broadcast television stations and stated that we would begin to incorporate this function into that process in the near future.

6. We also observed that digital television receivers could be marketed without the capability to receive over-the-air broadcast signals and sought comment on whether we should require that any such products be labeled to inform consumers of this limitation on product functionality. Finally, in their Petition for Reconsideration of issues addressed in the *Report and Order/Further Notice*, the Association for Maximum Service Television, Inc., the National Association of Broadcasters, and the Association of Local Television Stations, Inc. (MSTV/NAB/ALTV), requested that we reconsider our decision denying their request that we establish minimum performance standards for DTV receivers.

7. We received comments on the new proposals in the *Report and Order/Further Notice* from seven parties and replies to those comments from two parties. In addition, we received

[4] *Notice of Proposed Rule Making* in MM Docket No. 00-39, 15 FCC Rcd 4257 (2000).

[5] *Report and Order/Further Notice* ¶¶ 103-110. In the subsequent *MO&O* the Commission addressed petitions for reconsideration of the service rules issues addressed in the *Report and Order/Further Notice.*

[6] *See Fourth Report and Order* in MM Docket No. 87-268, 11 FCC Rcd 17771 (1996); *see also Report and Order/Further Notice* ¶¶ 57-61.

Petitions for Reconsideration concerning our proposal to require DTV reception in new TV receivers from three parties and replies/oppositions to those petitions from two parties. These parties are identified in Appendix A.

III. DISCUSSION

A. DTV Receiver Standards – DTV Reception Requirement

8. In the *Report and Order/Further Notice*, we recognized the arguments of the NAB, the North American Broadcasters Association (NABA), and other parties that DTV receivers are not yet available in the market in large quantities, and certainly not in sufficient volume to support a rapid transition to an all-digital broadcast television service. We therefore requested comment on whether a requirement to include DTV reception capability (a DTV tuner) in new television sets could help to develop the production volumes needed to bring DTV prices down to where they are more attractive to consumers and thereby promote the more rapid development of high DTV set penetration. In particular, we sought comment on whether we should require that new TV receivers have the capability to demodulate and decode over-the-air DTV signals. We stated that under such a requirement, TV sets would have to provide useable picture and sound quality commensurate with their video display and audio capabilities when receiving any of the recognized ATSC video formats. We further stated that a DTV reception capability requirement would not necessitate full high definition television (HDTV) capability in TV sets. For example, a TV set that had only NTSC level display capabilities would only have to be able to demodulate and decode DTV signals and present them at a standard definition display level equivalent to its NTSC capabilities. We also expressed concern about the potential impact of a DTV tuner requirement on consumers, especially low-income consumers, and therefore sought comment on the initial projected costs of such a requirement and realistic estimates of its costs over time.

9. We requested comment on how best to implement a DTV reception capability requirement, if we were to adopt one. Recognizing the lead time involved in product development, we acknowledged that consumer electronics manufacturers would need time to implement such a requirement. In this regard, we observed that the cost of DTV receiver components still is relatively high and that it would not be economically feasible at this point to include DTV capability in smaller screen receivers. We indicated that one approach for minimizing the impact of a DTV tuner requirement would be to phase it in over time to take advantage of the declining costs associated with increasing electronics manufacturing volumes. We noted that one such approach would be to apply the requirement initially only to receivers with large screen sizes, *e.g.*, 32 inches and above. We also stated that separate set-top DTV receivers could be included in meeting the reception capability requirements. We further requested comment on whether any DTV tuner requirements we might adopt should be based on percentages of the models marketed by each manufacturer, rather than units of production. Finally, we invited interested parties to submit other plans that would result in new TV receivers being equipped with DTV reception capability in a manner that would lead to rapid achievement of widespread penetration of DTV receivers in households.

10. MSTV/NAB/ALTV, Motorola and Paxson support adoption of a requirement for

DTV reception capability in new TV receivers. For example, Paxson submits that DTV receivers are too expensive and too few for this nation to accomplish a timely transition to digital television and a return of analog spectrum.[7] MSTV, NAB/ALTV argue that as consumers purchase more and more analog receivers, the goal of having digital television in 85% of households becomes more difficult to achieve. They state that no single television set manufacturer has an incentive to include DTV tuners in a majority of its sets for fear of a competitive cost disadvantage versus manufacturers who decline to make that investment. MSTV/NAB/ALTV argue that we should adopt a DTV tuner requirement that applies to all, or at least a substantial number of new television sets. They submit that as consumers purchase DTV reception-capable sets in the normal course of replacing their existing receivers, DTV penetration levels will then naturally increase.

11. With regard to the costs involved, MSTV/NAB/ALTV and Paxson contend that, because of economies of scale, concerns about increasing equipment costs to consumers have been exaggerated.[8] MSTV/NAB/ALTV state that if we were to decide instead to adopt a size-based phase in approach, we should apply the DTV tuner requirement first to all new sets 30 inches and larger; in two years extend the requirement to sets 19 inches and larger; and two years later complete the phase in by extending the requirement to all sets 13 inches and larger.[9] They submit that if we were to choose the percentage of a manufacturer's production approach, we should initially require that 33% of a manufacturer's new television sets 13 inches and larger have DTV reception capability and than increase that percentage to 67% in two years and 100% in four years. MSTV/NAB/ALTV believe that a plan that phased in the requirement too slowly would undermine the effective introduction of DTV sets, foster consumer uncertainty regarding the DTV transition, and delay the ultimate release of the analog TV spectrum. They also submit that while they would prefer that manufacturers meet a DTV tuner requirement by integrating tuners into receivers that include an audio/video display, they would not oppose allowing manufacturers to use separate set-top tuner to meet a DTV tuner requirement so long as the set-top DTV tuner is part of an indivisible DTV receiver package.[10] Paxson, on the other hand, argues that including set-top DTV tuner in the measures for meeting a tuner requirement would not address the marketplace failure to produce integrated DTV receivers.[11]

12. Motorola states that its new product development efforts demonstrate that DTV receivers and decoders can be integrated into television sets at a relatively low cost.[12] Motorola submits that it has developed a modular design for DTV receiver/decoder product family that will allow manufacturers to rapidly convert an existing analog TV set into a hybrid analog/digital

[7] MSTV/NAB/ALTV comments at 1-2; Paxson comments at 7-8.

[8] MSTV/NAB/ALTV comments at 5.

[9] Id. at 6-7.

[10] Id. at 7-8.

[11] Paxson comments at 9.

[12] Motorola comments at 3.

TV set at a price approximately $200 over an equivalent NTSC receiver.[13] Nonetheless, Motorola agrees with our initial concern that it would not be economically feasible at this time to require DTV capability in smaller screen TV sets, *i.e.*, sets with screens smaller than 27 inches. It states that the cost of today's DTV receive components would significantly inflate the cost of such sets. It states that for higher priced sets, however, the added cost would be commensurate with the premium that consumers expect to pay for a DTV set over an analog set. Motorola further indicates that if DTV tuners were included in a large percentage of all TV sets, economies of scale could reduce the retail cost differential between NTSC sets and standard definition/enhanced definition television (SDTV/EDTV) sets to approximately $50 by 2006.[14]

13. Subsequent to the formal comment and reply period in this proceeding, MSTV and NAB submitted a study by Arthur D. Little, Inc. (ADL Study) that developed estimates of the costs for the incremental materials needed to enable consumer television receivers to receive over-the-air DTV transmissions and the decline of those costs over time.[15] The ADL Study also estimated the effect of those incremental costs on the retail prices of DTV sets and the production costs and retail prices for stand-alone set-top "transverters" that can receive DTV signals and convert them for display on analog TV receivers. The ADL Study examined three scenarios for DTV receiver implementation: 1) a baseline case, where DTV receiver introduction is driven solely by market forces; 2) a mandate case, where the government requires inclusion of a DTV receiver in all new TV sets sold after January 1, 2004; and 3) a phased mandate case, where the government would first require that high-end receivers include a DTV receiver and then extend the requirement to include lower-end models over time such that all new TV receivers sold in the year 2006 would have a DTV receiver. The DTV capable receivers considered under each of these scenarios would provide standard definition (SDTV) level quality of video service, with initial prices of from $169 (high-end models) to $180 (low-end models) higher than comparable analog receivers.[16] Based on its assessment of costs and expected rate of consumer acceptance of DTV (*i.e.*, that DTV will be accepted at the same rate as color television), the ADL Study finds that under the baseline case, DTV receiver penetration would reach only 8.5% by 2006, with the

[13] Motorola submits that its "M-DTV" module will enable standard definition TV (SDTV) sets using a 480 line interlaced NTSC display (480i) to decode any of the 18 ATSC video formats and convert them to 480i at 4:3 or 16:9 aspect ratio. It states that this module will also decode and convert Dolby AC-3 audio data to stereo audio for presentation to the internal audio system normally used for analog TV or output digital audio data for 5.1 channel decoding by an external audio decoder. Motorola further states that its M-DTV module will enable low-cost Enhanced Definition TV (EDTV) sets using a 480 line progressive scan display (480p). Motorola comments at 4.

[14] Motorola comments at 5.

[15] "Assessment of the Impact of DTV on the Cost of Consumer Television Receivers," Arthur D. Little, Inc., Cambridge, Massachusetts, September 10, 2001, submitted by the National Association of Broadcasters.

[16] The ADL Study indicates that the difference in price increase between low-end and high-end TV sets is due to: 1) the incremental costs of adding a DTV tuner to high-end models are typically about the half of the costs of adding a DTV tuner to low-end models because high-end sets already include some internal digital signal processing and memory components to support features such as picture-in-picture, line doubling resolution enhancement, etc.; 2) high-end models normally have a higher manufacturer price mark-up and higher retail profit margin. The study states that these differences translate to an incremental retail price increase to add a DTV receiver to a high-end set that is approximately 94% of the retail price to add a DTV receiver to a low-end model.

price of a DTV capable receiver about $35-38 higher than a comparable analog set. Under the mandate case, DTV penetration would reach 75.5% by 2006 and 85%+ by 2007, with the price of a DTV capable receiver about $14-15 higher than a comparable analog set. Under the phased mandate case, the ADL Study predicts that DTV penetration would reach 65% by 2006 and 85% by 2007, with the price of a DTV capable receiver about $15-16 more than a comparable analog set. With regard to transverters (it assumes these devices can also receive cable service), the ADL study estimates that a DTV capable set-top box would cost approximately $380 in 2001, and by 2006 would decline to $218 under the baseline case and $195 under the mandate case. Under the study's assumptions, the price of analog addressable set-top boxes would be about $180. The ADL Study further concludes that the retail prices of DTV capable receivers could be dramatically lower in the initial years of production if manufacturers would adopt a "forward pricing" strategy.[17]

14. In their comments, MSTV/NAB/ALTV and Paxson also submit that the ACRA authorizes the Commission to require that new TV sets have DTV tuning capability. They state that the ACRA language is plain and unambiguous: the Commission has the authority to require that any television set manufactured for sale in the United States "be capable of adequately receiving all frequencies allocated by the Commission to television broadcasting."[18] They argue that the language of this section does not limit our authority to impose tuning requirements to only analog receivers.

15. CEA and Thompson Multimedia, Inc. (Thomson) oppose the adoption of a requirement for DTV reception capability in new TV receivers. CEA argues that a DTV tuner requirement would seriously impede the DTV transition through consumer reaction to the significantly higher prices of television sets that would result during the first few years.[19] It submits that subsequent to the issuance of the *Report and Order/Further Notice*, a host of organizations representing consumers, senior citizens, farmers and rural residents have expressed their opposition to a DTV tuner mandate because of the costs such a requirement would impose upon their constituents.[20] It argues that market incentives are much more efficient and should be relied upon to drive prices down and quality up. In this regard, CEA submits that since the adoption of the ATSC standard, manufacturers have introduced hundreds of DTV products and that annual growth in both unit and dollar sales for DTV products during the first four years on the market is projected to surpass that of computers, VCRs, CD players, and color TVs. It states that along with the growth in diversity of products and consumer sales, unit prices for DTV products have declined sharply.[21] CEA states that any regulatory intervention to dictate to

[17] "Forward pricing" is a strategy whereby manufacturers set a retail price lower than the manufacturing cost in anticipation of future cost reductions to stimulate sales.

[18] MSTV/NAB/ALTV comments at 9; Paxson comments at 2. *See also*, 47 U.S.C. § 303(s).

[19] CEA comments at *i* and 2; Thomson reply comments at 1.

[20] CEA comments at 4.

[21] In its comments, CEA submits that fully integrated, wide-screen television sets with full HDTV display capabilities are now available at prices under $3,000 and that this is more than a 50% price reduction since their introduction. It further indicates that for large screen projection televisions, consumers can now purchase DTV (continued....)

consumers the capabilities they can or cannot have in television sets would upset this vigorous and healthy market. It argues that a DTV tuner requirement would disrupt normal market incentives by forcing manufacturers to provide consumers with capabilities they do not want at prices they do not wish to pay. It submits that in response to such a requirement, manufacturers and retailers would develop and sell products that would meet the standards, but without any economic motivation beyond a strict compliance of the rule. CEA therefore argues that any economies of scale that could result from a manufacturing mandate would be distorted.

16. CEA states that even with an aggressive cost reduction curve, the electronics package needed to receive, decode, and display digital television services will still command a $200 per unit cost premium over the required analog circuitry for the foreseeable future.[22] It submits that rather than purchase sets that cost more than they wish to pay, consumers will simply put off the purchase of new sets as they wait for an eventual price decline, which will disrupt the normal demand curve and deflate sales volumes and market expectations. CEA states that for sets with display screens of 21" to 27", a required DTV tuner would result in a price increase of 67% to 85% for most sets and that such an increase would have a serious effect on demand. CEA indicates that for the 40% of sets sold today that are 20" or less, including a DTV tuner would double or triple their retail price. It further argues that likewise phased in requirements that initially focused on larger screen sizes would either be ineffective or severely affect consumer costs. In an *ex parte* letter submitted August 2, 2002, Thomson states that the manufacturer's cost of DTV reception/decoding capability today is approximately $250 and that this cost would decrease to approximately $75-80 by 2006 and $60 by 2007-2008. It further submits that the final cost to the consumer would typically include a markup of approximately 25%.

17. In its reply comments, Thomson argues that MSTV/NAB/ALTV's claim that a DTV tuner requirement would drive manufacturing costs down through economies is overly broad and simplistic.[23] It submits that economies of scale are reached only over time and that such economies are the product of long periods of cost reductions and technological advances. It notes that when Congress mandated UHF-reception capability in all TV sets, the added cost was minimized by the fact that UHF reception did not require the introduction of a new technology, but rather simply an extension of the tuning range and some basic performance requirements. It states that DTV reception, on the other hand, is an entirely new technology involving many more components and chips than adding UHF reception or, for that matter, V-chip or closed captioning capability. Thomson also points out that there are other issues affecting DTV receivers such as copy protection and DTV compatibility with cable services that are not yet resolved. Thomson

(Continued from previous page)
tuners and display units in approximately the same price range that existed for analog products several years ago. It submits that consumer purchases of HDTV monitors have moved from early adopters to the mainstream viewing public largely through the desire to view high quality digital content available on DVD recordings and satellite transmissions. CEA indicates that despite the relatively lower demand for over-the-air DTV broadcast receivers that it believes is due to lack of programming, a broad variety of DTV tuners and set-top converter boxes are now available at prices well below $1,000 and approaching half that amount. It states that receivers with integrated DTV tuner/decoders (DTV tuner/decoder and display in the same unit) are also available.

[22] CEA comments at 9-10 and *i*.

[23] Thomson reply comments at 7-8.

states that while economies of scale will develop and DTV receiver prices will fall, how fast that will happen will depend on: 1) the availability of a great quantity of unique, high quality programming; 2) final agreement on standards for compatibility between consumer DTV receivers and cable service; and 3) adoption of DTV copy protection systems. In an *ex parte* letter submitted August 1, 2002, Thomson states that it now supports a voluntary plan for a phased integration of DTV reception capability into all TV sets that is based on a phase in plan that was suggested by the Commission's Chairman in a letter of April 4, 2002 to Senator Ernest F. Hollings and Congressman W.J. "Billy" Tauzin.[24] The plan suggested by Thomson would provide for inclusion of DTV reception capability in all new TV sets, beginning with the largest sets and ultimately reaching sets with screen sizes smaller than 35" by 2007 or 2008. Thomson submits that its plan would allow DTV technology to mature and reach acceptable cost premiums for the consumer.

18. CEA also argues that we should reject arguments that continued production of analog-only sets will expand the embedded base of NTSC equipment and thus create an obstacle to public acceptance of DTV.[25] It submits that when consumers become attracted in numbers to DTV programming and this consumer demand and continued technical improvements and innovation further reduce prices for DTV set-top converter boxes, those analog sets can make the transition to display units for DTV reception as a matter of consumer choice. The Florida Action Network (FCAN) and the Massachusetts Consumers' Coalition (MCC), representatives of consumer interests, oppose a requiring DTV in new TV sets. These organizations are concerned about costs to consumers, particularly those with low-incomes such as the elderly, immigrants, agricultural laborers and poor rural families, students, and minorities. FCAN argues that any requirement that raises costs to consumers would result in the disenfranchisement of consumers. It states that once DTV programming becomes widely available, it will draw consumers and there will be a move toward acceptance of DTV as the national standard. MCC submits that consumers will seek out new televisions with DTV reception capability if they know that extensive program delivery facilities are available.

19. In an *ex parte* letter of August 1, 2002, CEA, through its attorney David R. Siddall, submitted a paper prepared by the Analysis Group/Economics (AGE Comments) commenting on the ADL Study submitted by MSTV/NAB/ALTV.[26] The AGE Comments concludes that the ADL Study has substantial shortcomings that seriously undermine its projections, such that the impact of a DTV tuner mandate on television sales, prices to consumers, and manufacturing costs would be greater and last longer than suggested by the ADL Study's projections.[27] Specifically, the AGE Comments contend that the ADL Study underestimated the costs to television

[24] *See* Letter from FCC Chairman Michael K. Powell dated April 4, 2002 to Senator Ernest F. Hollings and Congressman W.J. "Billy" Tauzin, re: Digital Television Plan.

[25] *CEA comments at 12.*

[26] *See ex parte* letter of August 1, 2002, by David R. Siddall, submitting "Comments of Coleman D. Bazelon and T. Christopher Borek Relating to Arthur D. Little, Inc.'s Assessment of the Impact of DTV on the Cost of Consumer Television Receivers," Analysis Group/Economics.

[27] AGE Comments at 1.

manufacturers of integrating a DTV tuner into TV sets. It compares the ADL Study to estimates by Thomson of $200-295 per set (although in its recent *ex parte* letter above, Thomson indicates that the incremental price of an integrated DTV tuner would be about $75 by 2007-2008).[28] The AGE Comments further state that the ADL Study ignored the decline in television sales that would accompany an increase in their price due to a tuner requirement and that the ADL Study's projections overstate the time required for costs to decline as a result of sales because sales are overstated. Finally, the AGE Comments argue that the ADL Study inappropriately assumes that television manufacturers can fully and instantaneously incorporate the cost-saving benefits of experience/sales-driven efficiency gains from as much as 25-fold increases in annual sales volume.

20. CEA and Thomson also argue that the Commission lacks the authority to require that television receivers be capable of adequately receiving digital broadcast signals.[29] CEA and Thomson argue that the tools of statutory construction, particularly legislative history and purpose, demonstrate that Congress did not intend for the ACRA to apply in the broad manner that the Commission concludes it does in the *Report and Order/Further Notice*. In this regard, they state that, as indicated in the Senate Commerce Committee Report on the ACRA (Senate Report), Congress enacted the ACRA for the sole purpose of ensuring the viability of UHF broadcasting by requiring that all television receivers include the capability to receive all VHF and UHF channels.[30] CEA argues that the purpose and legislative history of the ACRA are clear that "all frequencies" does not and could not include digital signals. Thomson points out that the Senate Report does not touch on the reception of digital signals. CEA and Thomson also argue that as indicated in the House Interstate and Foreign Commerce Committee Report (House Report) accompanying the legislation, Congress explicitly considered but rejected broader language that would have provided the Commission with authority to set "minimum performance standards."[31]

21. Thomson further contends that the Commission itself has expressly recognized the limitations of its authority under the ACRA. In particular, it points to a decision by the Commission in the mid-1980s on a request by Sanyo Manufacturing Corporation for waiver of the all-channel receiver requirements (Sanyo waiver) that a video display device for personal computers, video tape recorders, TV games and other devices fell outside the scope the ACRA. (This video display device responded to signals on channels 3 and 4 only). Thomson notes that in that decision, the Commission indicated that the signal sources used by the video display device were products of technologies that did not exist at the time that the statute was enacted and stressed that the concern of Congress in enacting the ACRA was to remedy a situation where the UHF television allocations were progressively being rendered less useful because fewer and

[28] This price increase is computed from the $60 increase in manufacturer's cost plus $15 for a 25% retail markup.

[29] CEA Petition for Clarification and Reconsideration at 3; Thomson Petition for Partial Reconsideration at 3.

[30] Senate Commerce Committee Report, S. Rep. No. 87-1526, 2d Sess. (1962), *reprinted in* 1962 U.S.C.A.A.N. Vol. 1, 1873.

[31] H.R. Rep. No. 87-1559 at 1 (1962). CEA Petition for Clarification and Reconsideration at 7; Thomson Petition for Partial Reconsideration at 5.

fewer television sets could receive anything but VHF signals.[32] Thomson argues that the digital tuner of today did not exist in 1962 and that a television receiver that is manufactured without the capability of receiving DTV signals does not pose any threat to UHF reception and thus falls outside the scope of the ACRA.[33] CEA further asserts that the Commission itself has twice declined to mandate the manufacture of television receivers that are capable of receiving both NTSC and DTV signals, citing the lack of a mandate under the ACRA.[34] It notes that in the *Third Report and Order and Third Further Notice of Proposed Rule Making* in the DTV proceeding, the Commission stated that "the All Channel Receiver Act does not mandate the manufacture of dual-mode (DTV and NTSC) receivers."[35]

22. In an *ex parte* submission filed after the formal comment and reply period in this proceeding, CEA submitted a White Paper further explaining its position that the Commission lacks statutory authority to require that television sets contain digital tuners.[36] In this White Paper, CEA argues that the phrase "all frequencies" as used in the ACRA does not encompass digital transmissions since, at the time the ACRA was enacted in 1962, digital technology did not yet exist.[37] CEA additionally maintains that by its terms, the ACRA addresses only the reception of all frequencies, and "television receivers comply with this requirement" even if they do not display all broadcasts on these frequencies.[38] CEA seems to suggest that the ACRA does not require receivers to respond and decode all broadcast transmissions offered by all technologies, but rather only analog transmissions in the VHF and UHF frequency bands.[39] CEA further argues that the omission of particular language referencing "new video technology" in section 330(a) of the Communications Act,[40] as compared to the inclusion of such language in sections

[32] *Sanyo Manufacturing Corp.*, 58 R.R.2d 719 (1985) (decision on reconsideration of *Sanyo Manufacturing Corp.*, 56 R.R.2d 681 (1984).

[33] Thomson Petition for Partial Reconsideration at 6.

[34] CEA cites statements by the Commission's in the *Fifth Report and* Order in the DTV proceeding that refer to statements in the *Memorandum Opinion and Order/Third Report and Order/Third Further Notice of Proposed Rule Making* (MO&O/*Third Report and Order/Third Further Notice)* in that proceeding. *See Fifth Report and Order*, MM Docket No. 87-268, 12 FCC Rcd 12809 (1997) (citing *Memorandum Opinion and Order/Third Report and Order/ Third Further Notice of Proposed Rule Making*, MM Docket No. 87-268, 7 FCC Rcd 6924 (1992). CEA comments at 13.

[35] *See MO&O/Third Report and Order/Third Further Notice* ¶¶ 81.

[36] Consumer Electronics Association White Paper regarding Digital Television Tuner Requirement, dated July 23, 2002 ("CEA White Paper").

[37] CEA White Paper, at 2-3.

[38] CEA White Paper, at 2.

[39] CEA White Paper, at 2-3.

[40] 47 U.S.C. § 330(a) (prohibiting the shipment of equipment described in section 303(s) of the Act that does not comply with applicable regulatory requirements).

330(b)[41] and 330(c),[42] means that the Commission's authority does not extend to digital technology under the ACRA.

23. *Decision.* In addressing this issue, we consider DTV receivers to be a necessary element of broadcast television service in the same way that analog TV receivers have been a necessary element of that service.[43] Although analog receivers are today still the dominant means by which viewers receive over-the-air broadcast television service, that dominance will change as we progress through the transition. And, of course, at the end of the transition, when DTV operation fully replaces analog operation, all TV sets will have to be able to receive DTV signals in order to receive over-the-air service.

24. With regard to our authority in this area, the language of the ACRA is clear in providing the Commission with the "authority to require" that television sets "be capable of adequately receiving all frequencies" allocated by the Commission for "television broadcasting.[44] Contrary to the position of CEA and Thomson, the authority provided under the ACRA applies to all devices used to receive broadcast television service, not just those used to receive analog signals. As NAB observes, the language of the ACRA does not limit our authority to impose tuning requirements to service provided using any specific transmission method. In fact, there is no mention at all of the technology used for transmission of television service in the ACRA or its legislative history, and in fact the language of the ACRA is crafted neutrally in this regard. Inasmuch as the Commission has allocated channels for television broadcasting provided with DTV technology, the ACRA authority empowers the Commission to adopt requirements that television receivers be able to receive the DTV service provided on those channels.

25. We also observe that the legislative history of the ACRA is not inconsistent with our action to require DTV reception capability in TV receivers. Inasmuch as DTV stations are assigned to VHF and UHF channels, rules requiring TV receivers to be able to receive all DTV channels are consistent with the intent of Congress in enacting the ACRA, *i.e.*, to provide the Commission with the authority to require that television receivers be equipped at the time of manufacture to receive all television channels in the allocated television broadcast bands (which at the time of passage were found in both the VHF and UHF bands).[45] Nothing in either a plain

[41] 47 U.S.C. § 330(b) (prohibiting the shipment of equipment described in 303(u) of the Act (closed captioning) that does not comply with regulatory requirements).

[42] 47 U.S.C. § 330(c) (prohibiting the shipment of equipment described in 303(x) of the Act (v-chip) that does not comply with regulatory requirements).

[43] The discussion herein pertains only to broadcast television receivers as defined in Section 15.(3)(w), *i.e.*, those intended for reception of service on the television channels authorized for service under Part 73 of the rules. See 47 C.F.R. 15(3)(w). The requirements adopted in this action do not apply to devices such as cable and satellite service receivers that are not designed to receive broadcast TV signals over-the-air.

[44] The ACRA states that the Commission shall "[h]ave authority to require that apparatus designed to receive television pictures broadcast simultaneously with sound be capable of adequately receiving all frequencies allocated by the Commission to television broadcasting ...." 47 U.S.C. 303(s).

[45] Senate Report, 1873. Even accepting *arguendo* CEA and Thomson's position that Congress did not intend the ACRA to give the Commission broad authority to set standards for television receiver performance and (continued....)

language reading of the ACRA or the legislative history suggests that the ACRA would no longer apply if the Commission were to change the transmission technology used for television service.

26. More broadly, in 1962, when the ACRA was enacted, Congress's focus was on the UHF/VHF aspect of the general issue of ensuring that TVs would receive all allocated channels – the specific problem at that time was the lack of TV sets that could receive UHF channels. While Congress discussed the need for a statutory remedy in that context, it crafted the statutory language more generally – to address analogous situations that might arise in the future. If Congress' intent had been to limit the Commission's power only to the extent of permitting receiver standards that would require the reception of UHF signals, then presumably it could have crafted the language of the ACRA much more narrowly.

27. In fact, the situation we face now with regard to reception of DTV channels is analogous to the UHF issue with which Congress was grappling when it promulgated the general language of Section 303(s). According to the legislative history, the Senate Committee recognized the existence in 1962 of a "vicious cycle" that had been "strangling" the development of UHF television, that is the "refusal by the public to buy UHF sets until there are UHF stations offering attractive programs, and the inability of UHF broadcasters to provide good programming in the absence of an audience which will attract advertisers and networks."[46] The Senate Committee determined that it was necessary to break this cycle and that to do so "must be done by striking at the root cause of the problem – namely, the lack of television receivers capable of receiving UHF signals."[47] Here, the Commission is faced with a similar problem – that is, the reluctance of the public to buy DTV receivers until there are DTV stations offering attractive DTV programs, and the lack of incentive of for broadcasters to provide good attractive DTV programming in the absence of an audience which will attract advertisers. As Congress and the Commission found in the UHF context, requiring the manufacture of DTV receivers will address the root cause of the problem, namely the lack of television receivers capable of receiving DTV signals.

28. While Congress did not intend for the authority granted by ACRA to be exercised in an unfettered manner, its concern was that the Commission would place requirements on manufacturers that went beyond those necessary to ensure adequate service from UHF channels.

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capabilities, other than mandating UHF/VHF receive capability, a requirement that new TV sets be capable of receiving DTV signals on all of the channels the Commission has allocated for television service is fully consistent with their narrow view of our authority, namely, that of establishing requirements to ensure that television receivers include the capability to adequately receive all UHF and VHF channels.[45] (CEA Petition for Clarification and Reconsideration at p. 6; Thomson Petition for Partial Reconsideration at p. 4.) Inasmuch as DTV stations are assigned to UHF and VHF channels, in the absence of such requirements mandating UHF/VHF reception capability for DTV, consumers would not necessarily be able to receive all UHF and VHF channels on every marketed television set. For example, it would be allowable to market DTV sets that could only receive signals on VHF channels, or, given that the great majority of DTV operations during the transition are on UHF channels, to market sets that could only receive DTV signals on UHF channels. Nothing in the ACRA or its legislative history indicates that Congress intended such a result.

[46] *See* 1962 U.S.C.C.A.N. at 1876.

[47] *Id.*

Thus, the statutory language uses the term "adequate" and rejected language that might be construed to require something more.[48] In this case, the issue is only whether DTV signals can be adequately received.

29. We reject CEA's argument that the statutory phrase "all frequencies" does not encompass digital transmissions since, at the time the ACRA was enacted in 1962, digital technology did not yet exist.[49] As the federal courts have recognized, "statutes are not confined in application to contemporary instances and their principles are to be extended to embrace new factual situations and new technological developments."[50] Like its analog VHF and UHF counterparts, DTV service also operates on a "frequency" and thus is encompassed within the provisions of the ACRA. Likewise, to the extent CEA construes the ACRA as requiring television receivers to receive all frequencies, but not to display broadcasts on those frequencies, we believe such a narrow reading would defeat the statute's very purpose. The ACRA was intended to ensure that the viewing public has access to receivers which are capable of receiving all broadcast signals. Thus, to suggest that the statutory requirements are somehow satisfied simply where a receiver picks up the frequency but is incapable of displaying the signal in a viewable format strikes us as an absurd reading of the ACRA. Indeed, as we have noted previously, the legislative history indicates that the word "adequately" was added to the ACRA (*i.e.*, "be capable of *adequately* receiving all frequencies") to ensure that all receivers would be constructed with equipment sufficient to permit "satisfactory and *usable* reception."[51]

30. Furthermore, we are not persuaded by CEA's argument that the omission of particular language referencing "new video technology" in Section 330(a) of the Communications Act,[52] as compared to the inclusion of such language in Sections 330(b)[53] and 330(c),[54] means that the Commission's authority does not extend to digital technology under the ACRA.[55] CEA relies on

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[48] In *Electronic Industries Association Consumer Electronics Group v. FCC*, 636 F/2d 973 (D.C. Cir. 1988), the court rejected a decision by the Commission mandating certain performance standards for television tuners on such grounds – *i.e.*, that the prescribed standards weren't currently attainable and that the Commission had mandated specific levels of performance that went beyond that which would ensure adequate reception.

[49] CEA White Paper, at 2-3.

[50] *Smith v. Pan Air Corp.*, 684 F.2d 1102, 1113 (5th Cir. 1982).

[51] Senate Report, 1879-1880 (emphasis added). *See also, In the Matter of Amendment of Part 15 of the Rules and Regulations with Regards to All-Channel Television Broadcast Receivers*, Report and Order, 21 FCC 2d 245 ¶6 (1970). *See EIA vs. FCC*, 636 F.2d 689, 695-96 (D.C. Cir. 1980).

[52] 47 U.S.C. § 330(a) (prohibiting the shipment of equipment described in section 303(s) of the Act that does not comply with applicable regulatory requirements).

[53] 47 U.S.C. § 330(b) (prohibiting the shipment of equipment described in 303(u) of the Act (closed captioning) that does not comply with regulatory requirements).

[54] 47 U.S.C. § 330(c) (prohibiting the shipment of equipment described in 303(x) of the Act (v-chip) that does not comply with regulatory requirements).

[55] Section 330 deals with the prohibition against shipment of certain television receivers. Subsections 330(b) (which covers closed captioning devices) and 330(c)(4) (which covers v-chip capabilities) contain a requirement (continued....)

the general principle of statutory construction that Congress acts intentionally in the disparate inclusion or exclusion of language in the same statute.[56] While this may be accurate as a general proposition, here the absence of the particular language in section 330(a) does not compel the interpretation urged by CEA.[57] The three sections at issue were enacted as part of entirely different Acts, separated by a significant time period. Subsection 330(a) was enacted in 1962 as part of the ACRA, approximately 28 years prior to the 1990 enactment of subsection 330(b) (enacted as part of the Television Decoder Circuitry Act of 1990), and approximately 34 years prior to the 1996 enactment of subsection 330(c) (enacted as part of the Telecommunications Act of 1996).[58] The legislative histories of the provisions offer no suggestion that any such limitation on section 303(s) was intended by the inclusion of the "new video technology" language in subsections 330(b) and (c), or by the omission of the "new video technology" language in subsection 330(a). Moreover, even if one were to accept CEA's view that the disparity between paragraph (a) and paragraphs (b) and (c) were intentional, that disparity would not prevent the Commission from applying paragraph (a) to DTV. Subsections (b) and (c) impose a mandate upon the Commission – "the Commission shall take such action as the Commission determines appropriate to ensure that [closed captioning and blocking, respectively] continues to be available to consumers." The absence of a similar mandate to update its ACRA regulation as technology changes cannot reasonably be read to preclude the Commission from doing so. We thus reject CEA's argument.

31. CEA and Thomson's reference to the Commission's 1984 decision on the Sanyo waiver ignores the fact that the video display device in that case was not intended for use as a receiver of broadcast television signals. Rather, the Sanyo device was intended to be used to display the signals of video game devices that provided their output signals in the NTSC analog TV format on the frequencies of TV channels 3 or 4.[59] Thus, the Commission at that time concluded that Sanyo's video display device fell outside the scope of the ACRA. In any event, our authority to require TV sets to adequately receive all of the frequencies allocated for TV service is discretionary -- the ACRA allows the Commission to make determinations as to whether and how to apply such requirements as appropriate.

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that "[a]s new video technology is developed, the Commission shall take such action as the Commission determines appropriate" to ensure such services continue to be available to consumers. 47 U.S.C. §§ 330(b), (c)(4). By contrast, subsection 330(a), which covers equipment covered under the ACRA, does not contain any such provision.

[56] CEA White Paper, at 3 (*citing U.S. v. Juvenile No. 1*, 118 F.3d 298 (5th Cir. 1997), *cert. denied*, 522 U.S. 976 and *cert. denied*, 522 U.S. 988 (1997)).

[57] *See generally, City of Columbus v. Ours Garage and Wrecker Service, Inc.*, -- U.S. --, 122 S.Ct. 2226 (2002) (refusing to apply presumption that the presence of a phrase in one provision and its absence in another reveals Congress' design, where there is otherwise no clear indication that Congress intended such a result).

[58] *See, U.S. v. Price*, 361, U.S. 304, 313 (1960) (views of a subsequent Congress form a hazardous basis for inferring the intent of an earlier one).

[59] Video game devices typically provide output signals in the NTSC format on the frequencies of channels 3 and 4 so that they can be viewed on regular TV receivers. The output is switchable between channels these two channels so that the user can select a channel that is not in use by a TV station in his/her local area.

32. As CEA observes, the Commission previously has not chosen to apply requirements for television receivers to include DTV tuning capabilities. We believe that this approach was appropriate in the early stages of the transition. Before broadcast stations began the widespread conversion to digital transmission, it was reasonable to allow consumer electronics manufacturers opportunity to develop appropriate products and to introduce them to the market gradually.

33. Now, however, given the current state of the transition and considering the current availability of equipment that can receive DTV signals over-the-air, we conclude that insufficient progress is being made towards bringing to market the equipment consumers need to receive broadcasters DTV signals over-the-air. This necessary change in receiver product capabilities is not yet occurring to any meaningful degree, and the lack of DTV receiver capability is delaying the transition and may seriously impede the transition in the future. We are now well into the DTV transition and almost two years beyond the concerns with the initial DTV receivers that led the Commission to review and then reaffirm the DTV transmission standard.[60] Manufacturers have thus had sufficient time to develop the necessary components to provide for DTV tuning and indeed such components are now available from multiple sources. In order for the transition to move forward as quickly and smoothly as possible, receivers with DTV capability need to be on the market in quantity and at reasonable prices. We note in this regard, a study submitted by NAB pursuant to the Commission's year 2001 "Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming" indicated that 81 million television sets in the U.S., or more than 30 percent of the 267 million total, receive programming directly from free, over-the-air TV stations.[61]

34. While broadcasters have progressed in their implementation of DTV such that almost a third of all stations are now transmitting DTV service, and DTV services reach more than 86% of the nation, the number of consumers with DTV capable receivers is still very low.[62] Data on market research reported by CEA indicates that in the year 2001, sales of set-top DTV receivers and receivers with an integrated DTV tuner were only 128,845 units and 70,295 units respectively. This contrasts sharply with information from the same market research showing that sales of DTV-ready receivers, *i.e.* receivers that can display DTV programming but do not have the capability to tune over-the-air DTV signals or decode them for display, exceeded 1.3 million units in 2001. CEA's market research report also indicates that sales of all digital television products, including set-top DTV tuner units and receivers with an integrated DTV tuner, are continuing to increase. We believe the overall level of DTV equipment sales provides a strong indication that consumers are interested in higher quality video and DTV service.

[60] *See Report and Order/Further Notice*, ¶¶ 88-92.

[61] *See* Comments of the National Association of Broadcasters, *In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, CS Docket 01-129, filed Aug. 3, 2001. In that filing, NAB also indicated that the 81 million sets includes 46.5 million sets in broadcast-only homes and 34.5 million sets in households that subscribe to an MVPD. Its study further found that broadcast-only homes are more likely to be lower income and thus less able to afford a subscription service.

[62] Edward O. Fritts, President and CEO, National Association of Broadcasters, "Broadcasters Moving Forward on DTV," remarks to the Advanced Television Systems Committee Annual Membership Meeting, May 15, 2002.

However, they are not yet routinely being provided with the capabilities needed to receive those services over-the-air from broadcast television stations.

35. Moreover, we do not see a trend developing that will rapidly provide U.S. households with the ability to receive DTV signals and bring the DTV transition to completion. The approximately 200,000 TV households with over-the-air DTV capability in the year 2001 was less than 16% of the number of DTV-ready receivers and only .2% of the 105,444,330 total U.S. households reported by Nielsen Media Research for that year.[63] We further observe that the April, 2002, "DTV Guide" published by the Consumer Electronics Association reports that there are 17 models of set-top DTV tuners and 23 models of television receivers with integrated DTV tuners currently on the market. This compares with 351 models of HDTV monitors and 33 models of enhanced definition monitors.[64] The DTV Guide also shows that only seven manufacturers are currently marketing receivers with integrated DTV tuners, while 42 manufacturers are producing HDTV and/or EDTV monitors. In addition, the price of set-top DTV tuners is still generally $500 or more. The low numbers and high prices of DTV-capable receivers that are on the market are simply not consistent with achieving an expeditious completion of the DTV transition. CEA's suggestion that these consumers be required to purchase a set-top converter box in order to receive DTV broadcast signals would be a more expensive option than an integrated tuner and is a solution that many consumers would find unattractive. Finally, we are concerned that continued marketing of analog-only sets can only serve to delay the transition further. Consistent with the DTV transition plan that Congress established in Section 309(j) of the Communications Act of 1934, and pursuant to our authority under the ACRA, our objective in establishing a DTV tuner requirement is therefore to ensure that television receivers with screen sizes 13" or larger and other television receiving equipment, such as VCRs and DVD players/recorders, manufactured or imported after a specified date be able to receive over-the-air DTV signals.

36. We are not persuaded that we should delay application of a DTV tuner requirement until there is final resolution of the outstanding controversies over copy protection and standards for DTV "plug and play" cable compatibility. We do not believe that those issues need to be resolved before we can make progress on DTV broadcast reception capability. Nevertheless, we do believe these issues are important and we are taking steps to resolve them. Concurrently with adoption of this Order, we are adopting a Notice of Proposed Rulemaking regarding a copy protection system for digital broadcast television.[65] With regard to cable compatibility - i.e., consumers' ability to watch digital programming over their cable system - we note that where cable subscribers use a set-top box capable of adequately passing through the digital content, they

[63] "U.S. TV Household Estimates," Nielsen Media Research, January 2002.

[64] "DTV Guide," a supplement to "TWICE" (This Week In Consumer Electronics), Consumer Electronics Association, April 2002. HDTV monitors are capable of displaying HDTV programs (vertical resolution 720 lines or higher, 33.75 kHz@60 Hz or greater scanning frequency) provided through an external DTV tuner/decoder; enhanced definition are capable of displaying programming at enhanced resolution levels (such as vertical resolution 480p, 480i, and in some cases 720p or 1080i, 31.5 kHz or higher scanning frequency).

[65] *See Notice of Proposed Rule Making* in MM Docket No. 02-230, *Digital Broadcast Copy Protection*, released August 9, 2002, FCC 02-231.

can watch high definition and other digital programming over their cable service today. Such set-top boxes, however, are not yet widely-deployed, though are in commercial production and the top ten cable operators in the country (representing more than 85% of subscribers nationwide) have committed to deploying them in the future in response to Chairman Powell's voluntary plan for accelerating the DTV transition.[66]

37. Nevertheless, we agree that development of "plug and play" cable compatibility is one of the key remaining goals for the DTV transition for those cable subscribers who do not have set top boxes available or do not want to use a set-top box. The Commission will address this issue in a forth coming Second Report and Order in the proceeding on Commercial Availability of Navigation Devices, CS Docket No. 97-80.

38. In considering how to implement the DTV tuner requirement, we remain attentive to the concerns we discussed in the *Report and Order/Further Notice* regarding the impact it could have on manufacturers, consumers and the television receiver market in general. As CEA Motorola and Thomson indicate, we understand that including DTV tuners in new TV sets may affect set prices, and that initially it will not be economically practical to include DTV tuners in sets with smaller screens. We also are aware that manufacturers will need lead time to redesign their products and marketing plans to comply with this new requirement. We believe it is important that the DTV tuner introduction plan we adopt allow for these concerns in order to minimize their impact.

39. We continue to believe that a plan that phases in a DTV tuner requirement for new TV receiving equipment similar to the approach presented in the *Report and Order/Further Notice* will provide the best means for rapidly providing consumers with the means to receive the DTV signals that are now being transmitted by broadcasters while minimizing the impact of this requirement on equipment manufacturers and consumers. In this regard, the plan we are adopting reflects and accounts for the following: 1) including DTV reception capability in new television receivers will require the redesign of product lines, 2) the cost of including that capability in receivers will initially result in a cost premium of approximately $200 per unit, and 3) prices are declining and will decline even faster as economies of scale are achieved with increasing volumes of production and production efficiencies are introduced over time. We are choosing an approach that will require that a party responsible for television receiving equipment ("responsible party") under our rules, generally the manufacturer or importer, include DTV tuners in a certain percentage of that party's entire production or importation of receivers in specific categories.[67] We believe this approach will better serve to ensure that a large volume of DTV tuner-equipped receivers are provided to the market than an approach that would require compliance based on a certain percentage of a responsible party's models in specific categories.

[66] *See* letter of May 1, 2002 from Robert Sachs, President and CEO of the National Cable Television Association to FCC Chairman Michael K. Powell.

[67] *See* 47 C.F.R. 2.909. Under Section 2.209, the party responsible for equipment such as television receivers that are subject to our "verification" equipment authorization procedure is the manufacturer or, in the case of imported equipment, the importer. If subsequent to manufacture and importation, the equipment is modified by any party not working under the authority of the responsible party, the party performing the modification becomes the new responsible party.

40. Under the phase in plan we are adopting, responsible parties will be required to equip new television receiving equipment that is shipped in interstate commerce or manufactured in the United States and for which they are responsible with the capability to tune and decode over-the-air DTV signals on all of the channels allocated for broadcast television service in accordance with the following schedule:

> Receivers with screen sizes 36" and above -- 50% of a responsible party's units must include DTV tuners effective July 1, 2004; 100% of such units must include DTV tuners effective July 1, 2005;
>
> Receivers with screen sizes 25" to 35" -- 50% of a responsible party's units must include DTV tuners effective July 1, 2005; 100% of such units must include DTV tuners effective July 1, 2006;
>
> Receivers with screen sizes 13" to 24" -- 100% of all such units must include DTV tuners effective July 1, 2007;
>
> TV Interface Devices (videocassette recorders (VCRs), digital versatile disk (DVD) players/recorders, etc.) that receive broadcast television signals -- 100% of all such units must include DTV tuners effective July 1, 2007.

For purposes of this implementation schedule, screen sizes are to be measured diagonally across the picture viewing area. In developing this schedule, we observe that there are differences in screen shapes between the traditional 4:3 aspect ratio and the more rectangular 16:9 DTV aspect ratio.[68] A 13" diagonal screen in the 16:9 aspect ratio is considerably smaller in appearance than a 13" diagonal screen in the 4:3 aspect ratio. To allow for these differences in establishing the minimum receiver screen size that will trigger application of the DTV tuner requirements, we will specify the minimum screen size to which the tuner requirement apply as the vertical measurement of a 13" diagonal 4:3 screen, which is 7.8 inches. Thus, the rules will specify that the DTV tuner requirement does not apply to units with integrated tuners/displays that have screens measuring less than 7.8" vertically. This approach is the same as that which the Commission adopted in applying the requirements for inclusion of closed captioning capability in DTV receivers in ET Docket No. 99-254. We will also allow responsible parties to include combinations of DTV monitors and set-top DTV tuners in meeting the required percentages of units with a DTV tuner if such combinations are marketed together with a single price. We see no reason to mandate that the ability to receive and view DTV signals be provided through a receiver with integrated tuning and display features. Where set-top boxes and DTV monitors are sold as a combination, the screen size of the DTV monitor will determine the receiver size category towards which the combination may be counted.

41. The phase in schedule we are adopting is intended to provide time for manufacturers and importers to prepare for and develop economies of scale in producing receivers with DTV reception capability. The initial requirement will apply only to sets with the largest displays-those with screen sizes 36" or larger. As CEA notes, such sets are the smallest segment of the

[68] The aspect ratio of a display screen is the ratio of its width to its height.

television receiver market and are also the most expensive.[69] The incremental cost of a DTV tuner in these sets will be relatively small portion of their price and therefore more acceptable to consumers. Indeed, as one consumer electronics manufacturer noted in a recent letter to the Commission, the price for these large-screen sets have been declining at a rate of approximately $100 to $800 per year.[70] Thus, any incremental cost increase attributable to a tuner requirement may be partially or completely offset by these general price declines. In addition, as most of the television receivers with integrated DTV tuners that are on the market today are models in this category, the impact of beginning with receivers in this group will be especially low for those manufacturers who already produce such receivers. The intermediate increases in proportions of receivers will gradually apply the tuner requirement to greater numbers of receivers as manufacturers develop efficiencies in production. Given that Congress has specified December 1, 2006, as the target completion date for the end of the transition, we believe that new television receivers manufactured or imported should include a DTV broadcast tuner before that date or as close to that date as economically feasible. In the case of the smallest and least expensive sets to which this requirement will apply (sets with screen sizes of 13" to 24"), we will not require compliance until July 1, 2007 – slightly beyond the target date for the end of the transition – to ensure that the cost impact can be as low as possible. We believe the five year phase-in period will be sufficient for manufacturers to be able to incorporate a DTV tuner into all of these television receiver products, such that the final phase can be completed with minimum impact. To further minimize the burden on manufacturers, we have scheduled the implementation dates for the various categories of receivers to correspond to the July 1 date each year when consumer electronics manufacturers traditionally introduce new products.[71]

42. We also believe that the five year period we are providing for responsible parties to include a DTV tuner in all receivers is sufficient to allow them to develop the efficiencies and economies of scale necessary to include such capability at reasonable prices that will be attractive to consumers. In this regard, we note that Zenith predicts that by that time the cost of producing a digital receiver can be about the same as an analog tuner.[72] Motorola submits that, using its modular design, the retail price differential between a receiver with DTV tuning capability and a model that tuned only analog NTSC signals would be $50 by 2006 if DTV tuners were added to a large percentage of all sets. Thomson, using its estimates of manufacturer's costs plus a 25% markup, predicts that the incremental effect on receiver prices would be about $75 by 2007-2008. The ADL study estimates that the retail price differential would be only $16 by 2006 under a phased mandate approach. The estimates of all of these sources of tuner costs, and of CEA as well, begin from a price differential for a receiver with DTV tuning capability of around $200 or

[69] CEA comments at 11.

[70] *See Letter from Richard M. Lewis, Senior Vice President, Zenith Electronics Corp. to FCC Chairman Michael* Powell, dated July 12, 2002 at 1 ("Zenith letter").

[71] For example, in its *ex* parte letter of August 2, 2002, Thomson states that new DTV models and features historically been announced by manufacturers in July of every year, with actual retail availability coming in September. Thomson further states that not unlike the standard 18-month cycle required for the introduction of virtually all new CE products, this New Product Introduction cycle is adhered to by most CE manufacturers.

[72] Zenith letter at 1.

slightly less in 2002. Although we recognize that there is some variability in these forecasts, we see no reason to expect that the actual costs of DTV tuners will exceed these ranges.[73] We agree that there may be some methodological shortcomings in the ADL study that could have an impact on its cost estimates under certain scenarios. However, the estimates of receiver price increases from the consumer electronics manufacturers give us confidence that the potential price increases under our phase in plan are within an acceptable range.[74]

43. Given these findings, we do not agree with CEA's unsupported assertion that a DTV tuner requirement will lead large numbers of consumers to put off purchases of new TV sets or that it will force manufacturers to produce products without any motivation beyond a strict interpretation of the rule. The strong and growing sales of DTV ready receivers provide clear indication that consumers are interested in higher quality television service. The DTV tuner requirement will aid this market trend by providing certainty to manufacturers about the introduction of a necessary product feature. While we recognize Thomson's argument that adding of DTV tuners to sets is more complex than adding other features such a UHF tuners, V-chips, and closed captioning receivers, it has been six years since the DTV transmission system was adopted in 1996 and during that time numerous parties have developed the necessary components for DTV tuners. We therefore conclude that the plan we are adopting will not result in disruption of the TV receiver market or undue burden on either consumers or consumer electronics manufacturers.

44. To the contrary, today's decision will ensure a smoother transition by limiting consumer confusion and conforming the emerging DTV marketplace to consumer expectations. It has now been almost forty years since ACRA's enactment. During that time, every broadcast television receiver sold in the U.S. has had the ability to receive every frequency assigned to broadcast television, despite the fact that a growing number of TV households subscribe to a multichannel video service and thus may only need a set that tunes to channel 3 or 4. Nevertheless, consumers generally still expect the television they purchase to be able to receive over-the-air broadcast signals. The tuner requirement we adopt today is a mechanism for continuing to meet those expectations as broadcasting transitions from analog to digital. In addition, unless cable and DBS carriage of digital broadcast signals increases significantly, a digital tuner may be the only access an MVPD household has to many digital broadcast services during the transition. Most cable and DBS systems currently are carrying few, if any, digital broadcast signals. As long as carriage of digital broadcast signals remains voluntary during the transition, a tuner requirement would at least provide MVPD consumers access to the digital broadcast signals in their market.

45. Consistent with the intent of Congress that we not use our authority under the ACRA to set broad standards for television receivers, we believe that the rules implementing the DTV tuner requirements should avoid imposing new performance standards on DTV except as

[73] CEA's assertion that a DTV tuner mandate would increase costs by $200 for the foreseeable future is unsupported.

[74] We further note that in its comments at footnote 6, Motorola indicates that consumers would pay an average premium of 22% for DTV reception capability.

necessary to ensure that receivers can adequately tune DTV signals on all of the television channels. We also believe that in crafting the specific provisions of this requirement it is important to allow manufacturers and importers to maintain broad discretion in determining the specific features and performance capabilities of their DTV receiving equipment. We understand that manufacturers and importers will need to develop DTV receiver products for a wide range of different user needs. In this regard, we are adopting our proposal to require only that television receivers provide useable picture and sound commensurate with their video and audio capabilities when receiving digital television signals. This minimum service capability requirement will allow manufacturers to produce a full range of products, from low-end units with only standard definition video capability to full feature devices that can display HDTV and provide access to data and other special services a television station might offer.

46. The only other specific requirements we are adopting under our DTV reception capability plan are those necessary to ensure that television sets be able to adequately receive DTV signals on all of the channels allocated to television service. The requirements that we currently apply to ensure that analog television receivers are able to adequately receive all of TV channels are set forth in Section 15.117 of the rules.[75] We find that the generic portions of the all-channel reception provisions of Section 15.117 that are not specific to analog receivers, specifically, paragraphs (a)-(e) of that section, also are appropriate for DTV tuning capabilities. These provisions require that a television: 1) be able to adequately receive all television channels, 2) provide approximately the same degree of tuning accuracy and ease for VHF and UHF channels; 3) have UHF tuning controls and channel readout indicators that are comparable in size, location, accessibility and legibility to VHF controls and readout indicators; 4) if any equipment and controls to simplify, expedite, or perfect, the reception of signals that are provided to tune VHF channels, must also provided to tune UHF channels; and 5) if an antenna is affixed to its VHF terminals or a VHF antenna is provided with the set but not affixed, shall also have an antenna designed to receive all UHF channels affixed to its UHF terminals or be provided with a UHF antenna, as appropriate. These provisions were implemented pursuant to the authority provided by the ACRA and are intended to ensure that television sets provide adequate reception of all stations, regardless of which portion of the TV spectrum, *i.e.*, UHF or VHF, in which they operate.[76] They are not dependent on the technology used to transmit television signals and are as appropriate and applicable for DTV sets as they are for analog sets.[77] Accordingly, we will apply paragraphs (a)-(e) of Section 15.117 to DTV receivers. As we determined in the *Report and Order/Further Notice* and are affirming elsewhere herein, we see no need for technical performance standards for DTV receivers at this time.[78]

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[75] 47 C.F.R. § 15.117.

[76] The requirements of Section 15.117 of the rules were originally adopted by the Commission in 1963 and have been amended numerous times over the years to reflect improvements in technology. *See Report and Order* in Docket No. 18433, 18 R.R.2d 1577 (1970).

[77] 47 C.F.R. § 15.117(a)-(e) and (h). Paragraphs (f) and (g) of Section 15.117 of the rules specify performance standards for the UHF portion of an analog TV receiver and therefore are not appropriate for DTV receivers. 47 C.F.R. §§ 15.117(f) and (g).

[78] *Report and Order/Further Notice* ¶¶ 93-96.

B. Update of the DTV Transmission Standard

47. *The DTV Transmission Standard.* In comments responding to the *Notice of Proposed Rule Making* (*Notice*) in this proceeding, ATSC indicated that it has made a number of changes to its "ATSC Digital Television Standard (A/53)," since 1996, when that standard was adopted by the Commission as the standard for terrestrial DTV broadcast service.[79] ATSC indicated that these changes include removing constraints associated with the "program paradigm," updating references to the underlying MPEG standards, replacing references to obsolete ATSC standards for Electronic Program Guide and System Information with a reference to the subsequently developed "ATSC Program and System Information Protocol (PSIP) Standard, A/65,"[80] and requiring a signal to identify colorimetry. It further noted that it was considering an increase in the maximum allowable audio bit rate. ATSC requests that we revise the rules to reference the latest version of the ATSC DTV Standard A/53.[81] We sought comment on whether we should revise our rules to include reference the latest version of the standard as requested by ATSC.

48. In its comments, ATSC urges that we revise our rules to reference the new version of the DTV standard. It submits that all of the modifications in the new version have been made only after careful consideration and deliberation within the technical committees of the ATSC and so reflect the inputs and viewpoints of all interested parties in all segments of the industry. It states that the changes to A/53 (which is now designated as A/53B) were developed through an industry consensus in the affected areas and implemented by the industry on a voluntary basis. ATSC indicates that the standard now also includes the latest change in the maximum bit rate. It further submits that there are other minor changes that are currently being considered by the technical committees of the ATSC and that it expects additional modifications and clarifications will be agreed upon as the digital transition progresses. It therefore asks that we: 1) recognize the likelihood of further changes over time; 2) reaffirm our intention to give great weight to proposed changes that reflect the kind of broad industry consensus developed through ATSC's standards-making procedures; and 3) establish streamlined rule making procedures for considering changes in the rules to reflect anticipated changes in the ATSC DTV standard. In a recent *ex parte* discussion with our staff, ATSC indicated that the current version of the standard is "ATSC DTV Standard A/53B, August 7, 2001."

49. CEA, MSTV/NAB/ALTV and Thomson state that they fully support updating all references in the rules to the current version of the ATSC DTV Standard. Motorola opposes updating the rules to reflect the new version of the ATSC standard on the basis that the standard is still fluctuating. It states that while it supports the existing voluntary ATSC standards and

[79] *See Notice of Proposed Rule Making* in MM Docket No. 00-39, 15 FCC Rcd 5257 (2000). The version currently specified in Section 73.682(d) of the rules, 47 C.F.R. 73.682(d), is dated September 16, 1995. Section 73.682(d) also specifies that DTV transmissions are not required to comply with portions of the ATSC DTV Standard that make reference to 18 specific mandatory video formats, defined in terms of, *e.g.*, screen aspect ratios, frame rates and type of scanning.

[80] *See* "Program and System Information for Broadcast and Cable," Advanced Television Systems Committee, Doc. A/65, December 23, 1997. This document is available on the Internet at www.atsc.org.

[81] Use of the ATSC PSIP standard (A/65) is addressed in the following section herein.

ongoing standards development work of the ATSC, including current activity that may lead to further changes in document A/53, it sees no compelling need for an update at the this time.

50. We find that it is desirable and appropriate to revise the rules to update our DTV rules to specify the August 7, 2001, version of ATSC DTV Standard A/53B in place of the September 16, 1995, version originally adopted. Updating the rules to reflect improvements in the standard will benefit both the public and broadcasters by allowing broadcasters to make technical improvements in their service that will enhance the quality of DTV services they provide. As ATSC and others point out, the revisions in the new version of the ATSC DTV Standard were developed through careful consideration and deliberation within the technical committees of the ATSC and thus reflect a consensus agreement based on the inputs and viewpoints of all interested parties in all segments of the industry. Although we recognize Motorola's concern that the standard remain fixed until final revisions are made, the changes reflected in the new version presented by ATSC are improvements that will not adversely affect the operation of any of the DTV receivers currently on the market or owned by consumers.

51. We also acknowledge the likelihood that there will be further improvements made to the DTV standards over time and indeed, encourage ATSC and other interested parties to continue their work and efforts in these areas. In this regard, we reaffirm our intention to give significant weight to proposed changes that reflect the kind of broad industry consensus developed through ATSC's standards-making procedures. While it will be necessary to conduct rule making activity to incorporate such changes in the rules, we nonetheless will endeavor to pursue such rule making as quickly as possible, either through our periodic review of the DTV transition or through separate proceedings as may be appropriate. Accordingly, we are revising Section 73.682(d) of the rules to specify ATSC Doc A/53B (ATSC Digital Television Standard, 7 Aug 01), except for Section 5.1.2 ("Compression format constraints") of Annex A ("Video Systems Characteristics") and the phrase "see Table 3" in Section 5.1.1 Table 2 and Section 5.1.2 Table 4. These exceptions are as provided in the current Section 73.682(d) and were set forth in the Commission's decision adopting the ATSC standards for DTV service in *Fourth Report and Order* in the DTV proceeding.[82]

52. *The Program System and Information Protocol Standard.* As noted above, in its comments responding to the *Notice*, ATSC also requested that we require use of the ATSC PSIP Standard as part of the DTV transmission standard. The ATSC PSIP specification provides for the transmission of system information and program guide data for broadcast DTV stations, enabling the identification of service channels and digital bit streams, and allowing receivers to generate electronic program guides. Through the program guide function, it also provides for selection through the program guide function of the type and language of closed captioning to be viewed, and for the transmission of program ratings information to allow parents to use V-chip technology. ATSC further requested Commission action to assure that: 1) "major channel numbers" in the PSIP are used properly; 2) the assignment of transport stream identifier (TSID) parameters is properly administered; and 3) DTV closed captioning and content advisory

[82] *See Fourth Report and Order* in MM Docket No. 87-268, 11 FCC Rcd 17771 (1996).

information conforms with the PSIP Standard.[83]

53. In responding to these requests in the *Report and Order/Further Notice*, we stated that we believe that an industry approach is generally the most appropriate means for managing the implementation of a PSIP system. However, we recognized that the TSIDs must be unique to each individual television station and that there is a need to coordinate TSID assignments for stations in the border areas with our neighbors in Canada and Mexico. We therefore agreed that TSID assignments should be made part of our process for broadcast television stations and stated that we will begin the process to incorporate this function into that process in the near future. We further indicated that until negotiations with Canada and Mexico on the DTV matter are complete and we have modified our licensing process and records management systems, we would continue to rely on the industry to make TSID assignments.

54. CEA and Thomson support adoption of the ATSC PSIP specification, arguing that this system is essential to the proper operation of receivers.[84] CEA indicates that PSIP is the portion of the DTV bitstream that enables receivers to identify, locate, and process the various types of content being broadcast, including video, audio (in multiple languages), closed captions, content advisory (V-chip) information, ancillary data, etc. It submits that adoption of PSIP is therefore needed to facilitate consumers using their television receivers to readily and easily identify the free over-the-air programming carried by broadcasters on multiple streams, to activate use of V-chip functionality, and to enable use of the closed captioning functionality. It argues that to the extent that our action on PSIP is limited to identification of TSID numbering, that action is not sufficient to enable tuning of digital channels, including especially multiple program streams carried by the same digital signal (multicasting). It states that to accomplish this, the tables and descriptors defined in the PSIP standard also must be transmitted. CEA further indicates that a recent survey conducted by NAB of the 161 stations that were on the air in November of 2000, showed that less than half (46.3%) of those responding were transmitting PSIP information. It therefore argues that PSIP cannot be optional and it must be required. It submits that if PSIP information is not transmitted, different television sets may very well assign different numbering to various multiple streams and thereby engender consumer confusion and frustration. CEA states that while it believes that we should adopt the PSIP standard in its entirety in order to maximize the benefits to the public of DTV, we should at a minimum require broadcasters to transmit the System Information component of PSIP. Specifically, it states that we should require transmission of the Master Guide Table (MGT), System Time Table (STT), Virtual Channel Table (VCT), and Service Location Descriptor at all times and transmission of the Content Advisory and Caption Service Descriptors when a program is rated or captioned. In their "Opposition to Petitions for Reconsideration" of the *Report and Order/Further Notice*,

[83] "Major channel number" is part of the DTV bit stream specified in the PSIP standard and used to identify the terrestrial broadcast station (or cable or satellite source) providing the DTV program(s). Where a station is transmitting multiple programs, it uses "minor channel numbers" to distinguish among them. Within each television market, each programming source (terrestrial DTV broadcast stations as well as cable or satellite DTV channels) must have a unique "major channel number" so DTV receivers can be tuned to the desired stations and programs. In addition, the PSIP standard uses a "TSID" to uniquely identify transport streams, again to allow DTV receivers to tune between programs arriving from different sources.

[84] CEA Petition at 12-14.

MSTV/NAB/ALTV submit that they agree that the Commission should adopt the PSIP specification in its entirety.[85]

55. We recognize the benefits for broadcasters and consumers of the service features offered by the ATSC PSIP specification. We do not, however, have sufficient information at this time to make a determination as to whether there are reasons that would warrant that we should include the PSIP specification in our rules and, if so, the service obligations that would also attach to its use. In view of the broadcast and consumer electronics industries' support for incorporation of this specification in the rules, we therefore will address the possible adoption of the ATSC PSIP specification into the rules in the Notice of Proposed Rule Making in our forthcoming Second Review of our policies for the DTV transition. In the interim, we will continue to support and encourage the voluntary use of the PSIP specification by broadcasters and cable operators and its inclusion in consumer electronics equipment. We also will include a reference to the ATSC PSIP Standard in Section 73.682(d) of the rules as a document that licensees may consult for guidance.

C. Other Issues

56. *Receiver Labeling.* In the *Report and Order/Further Notice*, we observed that digital television receivers, *i.e.* devices with integrated displays as opposed to set-top receiving devices that do not include displays, could be marketed that do not have the capability to receive over-the-air broadcast signals. For example, receivers intended only for use in receiving digital cable or direct broadcast satellite service might not include the capability to tune over-the-air broadcast television signals. We indicated that while we are not aware that any such receivers are being marketed at this time, such devices would be permissible under our rules.[86] We stated that if manufacturers chose to produce receivers that could be used with digital cable systems but could not receive digital broadcast signals, we believed that consumers should be so notified prior to purchase. We therefore sought comment on whether any manufacturers are producing or plan to produce digital television receivers that can receive digital cable transmissions, but are incapable of receiving digital broadcast signals over-the-air. We also sought comment on whether we should require any digital television receivers that cannot receive over-the-air digital broadcast signals to carry a label informing consumers of this limitation on the receivers' functionality.

57. MSTV/NAB/ALTV agree with our assessment that consumers will continue to expect that broadcast digital television receivers will be able to receive over-the-air DTV broadcast signals. They state that the expectation that a television set will receive over-the-air signals is so universally held and deeply ingrained that consumers must be made aware if this expectation will not be met. MSTV/NAB/ALTV therefore submit that we should require that manufacturers label DTV sets that are not capable of receiving over-the-air DTV signals. They state that to the extent that the Commission already has defined labels for DTV receivers marketed as "cable ready" or

[85] MSTV/NAB/ALTV "Opposition to Petitions for Reconsideration" at 2.

[86] The all-channel reception provisions of Section 15.117(b) of the rules, and indeed the ACRA authority underlying those provisions, would not apply to receivers that did not have any capability for receiving broadcast signals over-the-air. *See* 47 CFR § 15.117(b).

"cable compatible," we should adapt those labels as follows:

Digital Cable [or DBS] Ready [1,2,or 3] Only
Will Not Receive
Over-The-Air Broadcast Signals

They state that these labels would be strictly factual and would not make any value judgment about the lack of over-the-air reception capability.

58. CEA, Motorola and Thomson oppose a labeling requirement for television receivers that are not equipped to receive over-the-air broadcast TV signals, arguing that voluntary industry labeling can adequately address concerns regarding information on DTV set capabilities and that no further government regulation is necessary.[87] CEA submits that, at present, it is not aware of any commercially available digital cable receivers, *i.e.*, navigation devices, on the market, as important issues of compatibility and conditions for interconnection, such as copy protection requirements, remain unresolved. It submits that when such products do become available, a labeling requirement will be unnecessary because consumers are quite capable of distinguishing among the broad categories of video reception, such as broadcast, cable and satellite. CEA further states that manufacturers and retailers have no incentive to mislead consumers about the relative capabilities of various video products, but do possess powerful incentives to inform consumers accurately about such products so as to ensure customer satisfaction, avoid returns of sales, and make sales of complementary products. CEA and Thomson also point out that settling on the exact phrasing of such a label and its applicability could be very difficult to resolve.

59. Upon reviewing the record on this issue, we will not, at this time, require television receivers that cannot receive over-the-air digital broadcast signals to carry a label informing consumers of this limitation. At this point, we do not know when – or if – such products will become commercially available or how they will be marketed. We will continue to monitor the state of the marketplace and will take additional steps if necessary to protect consumers' interests.

60. *DTV Receiver Performance Standards.* In the *Report and Order/Further Notice*, we denied a request by parties representing broadcast television interests that we establish minimum performance standards for DTV receivers. In making this decision, we reiterated the position we took on this issue in the DTV proceeding, namely that we believe competitive market forces will ensure that DTV receivers perform adequately.[88] We noted that receiver performance involves trade-offs among many different factors and that manufacturers are generally in the best position to determine how these trade-offs should best be made to meet consumer demand. We also observed that TV receiver manufacturers, driven by market forces, are continuing to make significant improvements in their products, particularly in the area of indoor reception and multipath signal handling capabilities. In this regard, we agreed with parties representing TV

[87] CEA comments at 15-16; Motorola comments at 6.

[88] *See Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order* in MM Docket No. 87-268, *supra*, at 7486-87.

receiver manufacturers that the effect of setting DTV receiver standards at this point would be to stifle innovation and limit performance to current capabilities. We further observed that, as acknowledged by those pressing for DTV receiver standards, more work is needed before it would even be possible to make specific proposals for such standards. In addition, we noted that further enhancements to the 8-VSB modulation standard are being developed through the ATSC process. We did indicate, however, that we would continue to monitor receiver issues throughout the transition and would take appropriate action on receiver standards if necessary.

61. In its Petition for Reconsideration, MSTV/NAB/ALTV asks that we reconsider our decision not to impose minimum performance thresholds for DTV receivers if manufacturers do not promptly implement performance standards on their own.[89] They contend that mandatory receiver performance standards are needed to protect consumers and provide a realistic opportunity for the public to experience DTV services. MSTV/NAB/ALTV argues that their in-depth study of 8-VSB receiver performance includes data that contradicts our assessment that market forces are driving manufacturers to achieve adequate performance levels in their sets.[90] They argue that the data from their study indicates that while receiver improvements are being made, progress is slow and inadequate. They further argue that we provided no support for our position that performance thresholds would stifle innovation and limit performance to current capabilities, noting, for example, that after the Commission imposed UHF noise figure thresholds for analog TV receivers in 1962, receiver noise figure performance continued to improve substantially beyond those requirements.[91] Finally, MSTV/NAB/ALTV argue that we provided no support for our position that more work was needed before it would be possible to formulate specific proposals for performance thresholds.

62. MSTV/NAB/ALTV argue that we should adopt the same minimum levels of performance for DTV receivers with respect to receiver noise figures, carrier-to-noise ratios, and co-channel/adjacent channel/taboo channel desired-to-undesired (D/U) ratios that were assumed when creating the coverage and interference figures used in developing the DTV Table of Allotments.[92] They state that these thresholds would ensure a minimum level of receiver quality and would not dictate to manufacturers how they are to be met. They are concerned that unless DTV receivers are capable of operating at the performance levels used in the Commission's DTV planning factors, the coverage and interference predictions developed in the DTV proceeding

[89] MSTV/NAB/ALTV Petition at 10 and *i*.

[90] MSTV/NAB/ALTV Petition at 12. *See also*, VSB/COFDM Project "Investigation of VSB Improvements," December 2000, at 2.

[91] *See First Report and Order* in Docket No. 14760 (the All Channel Receiver Act proceeding), 27 Fed. Reg. 11698 (November 28, 1962).

[92] MSTV/NAB/ALTV Petition at 11. *See also, Sixth Report and Order* in MM Docket No. 87-268, 12 FCC Rcd 14588 (1997), at Appendix A. As noted by NAB, the DTV Table of Allotments was developed based on assumptions that DTV receivers would typically exhibit the following performance levels: noise figures (N_B) of 10 dB for high VHF and 7 dB for UHF; a carrier-to-noise ratio of =15.19 dB; a DTV-into-DTV co-channel D/U signal ratio of +15.27 dB; a lower DTV-into-DTV adjacent channel D/U signal ratio of –41.98 dB and an upper DTV-into-DTV adjacent channel D/U ratio 43.17 dB; and DTV-into-DTV taboo channel D/U signal ratios specified in Appendix A of the *Sixth Report and Order*.

will not accurately reflect the service available to American viewers. MSTV/NAB/ALTV submit that adopting these thresholds as receiver performance standards would be the first step in remedying many of the performance shortfalls experienced by DTV viewers. They further argue that multipath immunity thresholds are necessary and that we should commit to adopting such standards once MSTV/NAB/ALTV has completed them.

63. CEA submits that we were correct in our decision in the *First Report and Order* declining to adopt mandatory minimum DTV receiver performance standards.[93] It argues that such standards are not necessary as a matter of policy and that we do not have authority to impose them on manufacturers in any event. CEA submits that the DTV equipment market is thriving, consumer purchases of DTV equipment are increasing almost exponentially, and that this progress will only be compounded now that the DTV transmission standards debate has been resolved. It states that receivers produced in the competitive consumer electronics marketplace almost constantly are being redesigned and improved. It argues that if minimum performance standards were imposed, what was intended to be a "floor" on performance would in effect become a "ceiling," to the detriment of consumers.[94] CEA submits that if left to compete, manufacturers will have the incentive to "raise the bar" on receiver performance. It points to a recently released study by the ATSC Task Force on RF System Performance that states that "... more recently designed receivers demonstrate *significant* [emphasis in original] improvements in multipath tolerance compared to first-generation receivers" and that improvements have been made in other areas of receiver design including the RF front end, the automatic gain control (AGC) and other tracking loops.[95] It further notes our Office of Engineering and Technology's field study of DTV receiver performance (OET DTV Receiver Study) indicates that there are statistically significant differences in performance between first-generation and third-generation receivers.[96]

64. We believe that competitive forces are generally the best approach for ensuring that DTV receivers perform adequately. This position is consistent with our longstanding approach to authorization of radio services in which we generally define service areas, operating limits for transmitters, and interference protection criteria and then allow manufacturers to design and market receiving equipment to operate within the specified operating environment. This approach permits the marketing of receiving equipment that meets a broad range of consumer needs in terms of price, quality, performance, and features. In order to maximize the opportunity for development of a variety of products that meet these needs, we believe it is best to limit our intervention in the receiver market to instances where there are clear problems of performance or

[93] CEA opposition at 2.

[94] Id. at 9.

[95] Id. at 10. *See also*, "Performance Assessment of the ATSC Transmission System, Equipment and Future Directions Report of the VSB Ad Hoc Group to the ATSC Task Force on the RF System Performance," VSB Ad Hoc Group to the ATSC Task Force on the RF System Performance (2001) (VSB Performance Report).

[96] CEA opposition at 10. *See also*, "A Study of ATSC (8-VSB) DTV Coverage in Washington, D.C. and Generational Changes in DTV Receiver Performance," project TRB-00-01, Interim Report, FCC Office of Engineering and Technology, April 9, 2001.

capability that could affect the successful operation of an important service. Such was the case with the UHF tuner requirements and the associated noise figure standards for UHF tuners that the Commission adopted under the ACRA. More recently, we addressed the issue of multipath performance in DTV receivers. In each of these cases, we limited our involvement to the minimum necessary to address specific receiver performance deficiencies.

65. We see no apparent problems in the performance of the current generation of DTV receivers that would warrant further intervention on our part at this time. As shown by the results of the OET DTV Receiver Study, the third generation DTV receivers provided unimpaired service at 97% of the locations tested with an antenna 30' high and 85% of the locations tested with an antenna 7' high.[97] We also observe that the TV service model does not assume service at all locations within a station's predicted service area, recognizing that terrain, structures and foliage will affect propagation. For example, at the Grade B contour (the edge of a station's service area) service is expected at only 50% of the locations 90% of the time (F(50,90)) and at the Grade A contour (closer in towards the transmitter) service is expected at only 70% of the locations 90% of the time F(70,90)).[98] The OET study results, which were taken over a number of sites randomly selected, appear well within the performance expectations for DTV service with respect to noise and equalizer performance. We further observe that the OET DTV Receiver Study found that the DTV receivers tested performed considerably better in comparison to the NTSC receiver that was tested simultaneously at the at the same sites. The NTSC receiver provided an acceptable picture at 66% of the test locations with the 30' antenna and 27% of the locations with the 7' antenna. We also note CEA's comment that the broadcast industry's 8-VSB/COFDM Project found that "[n]early half of all indoor reception failures in the MSTV/NAB tests were due simply to insufficient signal strength."[99] While these field measures did not provide specific information on receivers' ability to perform in the presence of signals on adjacent channels and taboo channels, *i.e.* channels more than plus or minus one channels away from the channel on which a station is operating, there were both DTV and NTSC signals at significant levels on adjacent and taboo channels during all of these field testing efforts. Again, the high levels of successful reception observed in the testing appear to indicate that DTV receivers perform acceptably.

66. We do, however, recognize the interests of broadcasters in seeking to improve the performance of DTV receivers generally in order to maximize the ability of all consumers in a station's service area to actually be able to receive service. In this regard, we encourage them to continue to work with consumer electronics manufacturers to further improve the performance levels of DTV receivers. Receiver manufacturers are continuing their work in this area and so there is opportunity for broadcasters to participate in that process. One aspect of broadcasters'

[97] The TV service model assumes reception with an outdoor antenna mounted 30' high. *See* 47 C.F.R. § 73.686(b)(2).

[98] The F(50,90) standard is used for both analog and digital TV service; the F(70,90) level is used principally with analog service, but is nonetheless relevant also to DTV service for comparison purposes. *See* 47 C.F.R. 73.622(e) and 73.683.

[99] CEA opposition at 10, citing the VSB Performance Report ¶ 6.2.2.2.

involvement could be to determine whether voluntary industry receiver performance standards are needed and if so, to develop such standards.

67. While the DTV planning factors suggested by MSTV/NAB/ALTV reflect the industry and Commission's view of what could be considered typical DTV receiver performance and might serve as a starting place for discussions with consumer electronics manufacturers, there are other considerations such as price and a consumer's location within a station's service area that might not make those performance specifications ideal for all receivers. Again, we believe these matters are best left to the industries to resolve. Accordingly, we are denying MSTV/NAB/ALTV's request that we act to impose minimum performance thresholds for DTV receivers if manufacturers do not promptly implement performance standards on their own.

IV. ADMINISTRATIVE MATTERS

68. *Paperwork Reduction Act Analysis.* This Second Report and Report and Order and Second Memorandum Opinion and Order has been analyzed with respect to the Paperwork Reduction Act of 1995, and found to impose no new or modified reporting and recordkeeping requirements or burdens on the public.

69. *Accessibility.* Accessible formats (computer diskettes, large print, audio recording and Braille) are available to persons with disabilities by contacting Brian Millin, of the Consumer & Governmental Affairs Bureau, at (202)418-7426, TTY (202) 418-7365, or at bmillin@fcc.gov.

70. *Final Regulatory Flexibility Analysis.* As required by the Regulatory Flexibility Act (RFA),[100] the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) of the possible impact on small entities of the rules adopted in this Second Report and Order and Second Memorandum Opinion and Order.[101] The FRFA is set forth in Appendix C.

71. *Additional Information.* For additional information on this proceeding, please contact Alan Stillwell of the Office of Engineering and Technology at (202) 418-2470.

V. ORDERING CLAUSES

72. Accordingly, IT IS ORDERED that, pursuant to the authority contained in Sections 1, 2(a), 4(i),7, and 303 of the Communications Act of 1934 as amended, 47 U.S.C. §§ 1, 2(a), 4(i), 7 and 303, Part 73 of the Commission's rules, 47 C.F.R. Part 73, IS AMENDED as set forth in Appendix B of this Second Report and Order and Second Memorandum Opinion and Order.

73. IT IS FURTHER ORDERED that the Petition for Clarification and Reconsideration filed by the Consumer Electronics Association, the Petition for Partial Reconsideration filed by

[100] 5 U.S.C. § 601 *et seq.*

[101] 5 U.S.C. § 604.

Thomson Multimedia, Inc., and Petition for Reconsideration filed by the Association for Maximum Service Television, Inc, the National Association of Broadcasters, and the Association of Local Television Stations regarding issues in the *Report and Order and Further Notice of Proposed Rule Making* in this proceeding ARE DENIED.

74. IT IS FURTHER ORDERED that, pursuant to the Contract with America Advancement Act of 1996, the rule amendments set forth in Appendix A SHALL BE EFFECTIVE sixty days after publication in the Federal Register.

75. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Second Report and Order and Second Memorandum Opinion and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary