

**Before the  
UNITED STATES DEPARTMENT OF COMMERCE  
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION  
Washington, D.C. 20230**

In the Matter of	)	Docket No. 060512129-6129-01
	)	
Implementation and Administration of a	)	
Coupon Program for Digital-to-Analog	)	
Converter Boxes	)	

**COMMENTS OF THE  
ASSOCIATION FOR MAXIMUM SERVICE TELEVISION,  
CONSUMER ELECTRONICS ASSOCIATION, AND  
NATIONAL ASSOCIATION OF BROADCASTERS**

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## EXECUTIVE SUMMARY

The Association for Maximum Service Television, the Consumer Electronics Association and the National Association of Broadcasters join together to support the NTIA digital-to-analog converter box program and to make certain recommendations with respect to the structure and workings of the program. The program is a vital piece in the strategy for optimizing the digital transition because its purpose and effect is and should be to leave no viewer behind.

These Joint Industry Commenters believe that implementation of NTIA's converter box program should be guided by the following five principles:

- continued consumer access to broadcast television,
- availability of high-quality, easy-to-use, low-cost digital converter boxes,
- simplicity and clarity,
- fairness and prevention of waste and abuse, and
- industry cooperation to serve the consumer.

With respect to the issue of consumer participation in the program, the Act, its legislative history, its underlying purpose and the plain meaning of its language, as well as practical considerations, preclude any implementation of the program that would exclude from coupon-eligibility analog sets in cable or satellite-served homes that are not connected to those services. For the same reasons, consumer eligibility should not be delimited by a means test. And consistent with the language and intent of the statute, NTIA should adopt a first-come, first-served process for distributing coupons.

Given the special circumstances of this project, NTIA should also adopt technical requirements, including minimum performance requirements, for digital converter box eligibility. The MSTV/NAB digital converter box project demonstrated that converters can be high quality, low cost and easy for consumers to use. CEA, NAB and MSTV here propose specific requirements that are attached in Appendix A to these comments. They grow out of ATSC's A/74 Recommended Practice on Receiver Performance Guidelines established over two years ago. But there have been ongoing improvements since then that enable NTIA now to set reasonable requirements exceeding A/74 performance levels in some areas and fill in some requirements for performance levels where ATSC A/74 only specified test procedures. These minimum performance requirements reflect the consensus of the broadcast and consumer electronics industries for the specific purpose of the narrowly-tailored NTIA program.

The minimum requirements that NTIA adopts to ensure consumers' ability effectively to receive broadcast signals should not preclude converter box features that improve over-the-air reception or enhance the usability or user convenience of the converter box. Accordingly, eligibility should not be precluded by inclusion in a converter box of an electronic

program guide or a smart antenna interface. Consumers expect the former as part of the contemporary everyday viewing experience, and smart antennas are useful in various circumstances to assure reliable service.

As for energy standards, the NTIA should be prepared to review and, as appropriate, adopt the specifications being worked on under EPA's Energy Star program through joint industry and government collaboration. It should stand firm against the efforts of any individual state to impose its own specifications.

Balancing the need for timeliness with the need to protect consumers from faulty devices, NTIA should direct manufacturers to test their own products and transmit the results to the FCC (the agency expert in such matters). The FCC should then review those results in an expedited manner, with the power to interdict defective or below-standard devices.

Finally, consumer electronics equipment manufacturers and the broadcast industry will fully support and implement consumer education programs. The retail industry, which has much experience in coupon and similar programs, will also have an important role in making a success of this critical program aimed at facilitating the transition, compensating and otherwise accommodating analog-only set owners whose analog receivers will no longer receive over-the-air broadcasts after February 17, 2009 and assuring continuity of free, universal and local broadcast service.

**TABLE OF CONTENTS**

EXECUTIVE SUMMARY ..... i

TABLE OF CONTENTS..... iii

I. GUIDING PRINCIPLES ..... 2

II. THE BASIC PARAMETERS FOR CONSUMER PARTICIPATION IN THE PROGRAM..... 4

    A. Eligibility Requirements ..... 5

        1. Proposal to exclude cable and satellite households ..... 5

        2. Economic need..... 10

        3. Priority ..... 11

    B. Technical Requirements..... 12

        1. MSTV/NAB converter box program ..... 12

        2. Device eligibility requirements..... 13

        3. Features ..... 15

        4. Energy standards..... 18

    C. Conformity Assessment Process..... 21

III. DISTRIBUTION AND EDUCATION..... 22

APPENDIX A: Recommendation of CEA, MSTV and NAB for Functional and Performance Requirements for a Digital-to-Analog Converter Box To Be Eligible for NTIA’s Coupon Program Pursuant to the Digital Television Transition and Public Safety Act of 2005

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ASSOCIATION FOR MAXIMUM SERVICE TELEVISION,  
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NATIONAL ASSOCIATION OF BROADCASTERS**

In a unique collaboration to support the important needs of consumers during the digital television transition, The Association for Maximum Service Television, Inc. (“MSTV”),<sup>1</sup> the Consumer Electronics Association (“CEA”)<sup>2</sup> and the National Association of Broadcasters (“NAB”)<sup>3</sup> (collectively, the “Joint Industry Commenters”) have joined together to comment on

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<sup>1</sup> MSTV is the non-profit trade association representing local broadcast television stations committed to preserving the technical integrity of the public’s broadcast television service.

<sup>2</sup> CEA is the principal trade association promoting growth in the consumer technology industry through technology policy, events, research, promotion and the fostering of business and strategic relationships. CEA represents more than 2,100 corporate members involved in the design, development, manufacturing, distribution and integration of audio, video, mobile electronics, wireless and landline communications, information technology, home networking, multimedia and accessory products, as well as related services that are sold through consumer channels.

<sup>3</sup> NAB is a nonprofit trade association that advocates on behalf of more than 8,300 free, local radio and television stations and also broadcast networks before Congress, the Federal Communications Commission and the Courts.

the issues raised in NTIA's Notice of Proposed Rulemaking<sup>4</sup> on the digital television converter box program that Congress created in the Digital Television Transition and Public Safety Act of 2005.<sup>5</sup> CEA, MSTV and NAB, on behalf of their members, also pledge their strong support for this important program that NTIA is charged with implementing.

As NTIA is aware, these trade associations representing local broadcasters and consumer electronics manufacturers have not always reached consensus on public policy issues related to the digital television transition. However, with a common interest in the successful transition to all-digital television broadcasting in February 2009, NAB, CEA and MSTV have come together to present a consensus position on NTIA's converter box program.

NAB and MSTV, in collaboration with equipment manufacturers, worked with Congress to establish a converter box program that would protect the rights of all Americans to receive free, over-the-air television service after the transition. NTIA's decisions in implementing the program should be, at their core, consumer-focused. The digital television transition is the single most significant conversion in the history of broadcast television, and it promises to bring important and long-awaited benefits to the American public. In implementing the converter box program, NTIA must ensure that no consumer is left behind.

## **I. GUIDING PRINCIPLES**

The Joint Industry Commenters share the common goal of facilitating our nation's transition to digital television, the success of which is critical to consumers, as well as to the

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<sup>4</sup> *Implementation and Administration of a Coupon Program for Digital-to-Analog Converter Boxes*, Notice of Proposed Rulemaking & Request for Comment, 71 Fed. Reg. 42067 (2006) ("NPRM").

<sup>5</sup> Deficit Reduction Act of 2005, Title III, Pub. L. 109-171, 120 Stat. 4 (Feb. 8, 2006) ("Act").

consumer electronics and television broadcast industries. Together with the cable and satellite industries and the government, our industries have the largest responsibilities with respect to making the transition a success. The transition is revolutionizing the broadcast television service by enabling stations to offer consumers new program choices, high-quality video, and audio, and advanced features at no cost to the public, and at the same time making available additional spectrum for public safety and other innovative uses. The converter box program is an important component of the success of the digital conversion for the American consumer.

NTIA's converter box program should be guided by the following core principles:

- *Continued Consumer Access to the Broadcast Service.* When Congress adopted the Act, it was concerned that the digital transition, for all its public interest potential, also could disenfranchise tens of millions of analog over-the-air television viewers. The converter box program was Congress' response to that concern. Therefore, NTIA's administration of the program must effectively ensure continuity of service to analog television sets. Consumers have a large investment in analog-only receivers that will be rendered unusable for broadcast television reception and users of those sets will be deprived of service unless they take advantage of the converter box program.<sup>6</sup> This is not a subsidy program; it is a consumer reimbursement program. After all, even with a substantial amount of the reclaimed spectrum being turned over to public safety, the government will reap billions of dollars through spectrum auctions made possible by the digital transition.
- *Availability of High Quality, Easy-to-Use, Low-Cost Converter Boxes.* During the legislative debate, much emphasis was placed on ensuring that consumers' out-of-pocket costs to obtain a digital converter box would be minimized, thereby removing economic barriers to completing the DTV transition. It is equally important that the converter boxes work properly in the myriad of installation configurations in which they will be placed, and that they will be as intuitive and easy to understand as the analog television receivers to

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<sup>6</sup> Alternatively, they could replace all their analog-only sets with integrated digital receivers or subscribe to a pay programming service, which may or may not carry all of the broadcast services that would be available to the consumer for free, over the air. Neither of these options should be required.

which they will be interfacing. The NTIA program must equally support all three goals: high quality, ease of use, and low cost.

- *Simplicity and Clarity.* The converter box program is a large-scale and, in many respects, unprecedented program, involving detailed technical issues, complicated administrative implementation, and various participants – consumers, retailers, manufacturers, and broadcasters across the country. To be effective despite its breadth and technical and logistical complexity, NTIA’s administration of the program must strive for simplicity. For consumers and others involved, the program must also be easy to understand and follow.
- *Fairness and Prevention of Waste and Abuse.* In order to be successful, the converter box program must also promote fairness and efficiency. It should be structured to facilitate equitable distribution of coupons to all Americans with analog televisions that depend on over-the-air broadcasts. The program should also be structured to prevent abuses and waste and deter fraudulent attempts to obtain program benefits.
- *Cooperation.* The government, broadcasters, manufacturers, and retailers must each contribute to the above goals by providing consumers with the tools and information necessary to make effective use of the converter box program.

Undoubtedly, there will be challenges in implementing the converter box program, particularly because it will involve millions of consumers, tens of millions of analog sets, thousands of retail outlets, various converter box manufacturers and 1,600 broadcast stations. The broadcast and consumer electronics industries are pleased to support this program and offer the following suggestions to optimize its consumer utility and effectiveness.

## **II. THE BASIC PARAMETERS FOR CONSUMER PARTICIPATION IN THE PROGRAM**

The most fundamental decisions about the converter box program were made by Congress when it enacted the Digital Television Transition and Public Safety Act of 2005. The statute allocates up to \$1.5 billion to reimburse consumers for purchasing digital-to-analog



converter boxes in order to avoid loss of free, over-the-air television service.<sup>7</sup> It details the number of coupons to be made available per household, the manner in which the coupons are to be redeemed, and the expiration date of the coupons.<sup>8</sup> Nevertheless, as detailed in the Notice, there remain important questions concerning the administration of the program.<sup>9</sup> These comments address those questions.

**A. Eligibility Requirements**

**1. Proposal to exclude cable and satellite households**

In detailing the procedures that NTIA should use to administer the converter box program, the Act uses the inclusive term “households” to identify who is eligible to participate in it.<sup>10</sup> Congress adopted this inclusive language to ensure that *all* Americans will continue to have access to the rich programming and critical local and national information provided by America’s broadcasters. NTIA’s NPRM, however, proposes to narrowly define “households” so as to exclude the millions of American consumers who subscribe to cable, satellite or other MVPD<sup>11</sup> services but who also rely on analog-only sets that are not connected to these services.

Statutory Mandate. This constricted definition of “households” is inconsistent with the Act, and it would impermissibly prevent millions of Americans from obtaining benefits

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<sup>7</sup> Act at §§ 3005(c)(2)(B), 3005(c)(3).

<sup>8</sup> *Id.* at § 3005(c).

<sup>9</sup> See H.R. Rep. 109-362 at 202 (Dec. 19, 2005) (Conf. Rep.) (listing the specific questions that Congress directed NTIA to resolve in this rulemaking).

<sup>10</sup> Act at § 3005(a)(1) (specifying that NTIA shall “implement and administer a program through which households in the United States may obtain coupons that can be applied toward the purchase of digital-to-analog converter boxes”).

<sup>11</sup> An “MVPD,” or “multichannel video programming distributor,” is “an entity engaged in the business of making available for purchase, by subscribers or customers, multiple channels of video programming.” 47 C.F.R. § 76.1300(d). Cable and satellite are the major MVPD service providers, with telecommunications providers newly entering the market.

which Congress has provided to them. When Congress wanted to limit eligibility for the program, or the benefits available under it, it did so explicitly. Congress defined the eligible set-top boxes in a manner that precludes cable or satellite set-top boxes from being included in the program.<sup>12</sup> It also specified in the Act that NTIA “shall ensure that each requesting household receives . . . no more than two coupons.”<sup>13</sup> If Congress intended to exclude second and third over-the-air analog sets in cable and satellite homes, then it could have used a term other than “household” to describe those eligible for the program, or it could have qualified the term “household.” But Congress took neither of these steps.

It is well-established that, when a statutory design is clear and unambiguous, there is no room for interpretation.<sup>14</sup> Congress established specific limitations on certain aspects of the program, but, critically, it provided no limitation at all on the “households” eligible for the program; nor did it give NTIA authority to adopt any such limitation. It is impossible to read the statutory term “households,” either on its own or with reference to the rest of this section of the Act, to mean “households that exclusively rely on over-the-air broadcasts.” NTIA’s proposed interpretation is, accordingly, not authorized by the statute. Under widely acknowledged principles of statutory construction, that is where the analysis must end.<sup>15</sup>

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<sup>12</sup> Act at § 3005(d).

<sup>13</sup> Act at § 3005(c)(1)(A). The Act also specifies that the two coupons cannot be used in combination and that coupons should expire three months after they are issued. *Id.* at §§ 3005(c)(1)(B)-(C).

<sup>14</sup> *See, e.g., BedRoc Ltd. v. United States*, 541 U.S. 176, 187 n.8 (2004) (plurality op.) (quoting *United States v. Fisher*, 2 Cranch 358, 399 (1805)) (applying the longstanding rule that, “[w]here a law is plain and unambiguous, whether it be expressed in general or limited terms, the legislature should be intended to mean what they have plainly expressed, and consequently no room is left for construction”).

<sup>15</sup> *See id.* at 183 (“[O]ur inquiry begins with the statutory text, and ends there as well if the text is unambiguous.”).

The legislative history also leads to the same conclusion. The Conference Report cited in the NPRM explains that the purpose of the converter box is “[t]o help *consumers* who wish to continue receiving broadcast programming over the air using *analog-only televisions* not connected to cable or satellite service.”<sup>16</sup> The Conference Report is clear that the Act’s purpose is to help “consumers,” *without limitation*, and to make the program’s benefits available for “analog-only televisions not connected to cable or satellite service.” Without justification, the NPRM interprets the Conference Report as if it stated, instead, that the benefits would be available only to “consumers who *only* own analog televisions not connected to cable or satellite service.” Thus, the portion of the Conference Report cited by the NPRM rebuts, rather than supports, NTIA’s proposed eligibility limitations.

Likewise, the NPRM quotes the Conference Report’s observation that many consumers already have cable or satellite service and so “[o]nly consumers relying on over-the-air broadcasts should need to participate in the . . . program.”<sup>17</sup> The NPRM would read the word “exclusively” into that sentence where it does not exist, and would ignore the Report’s subsequent clarification that the drafters made this observation in support of their decision to “structure . . . the program [in a manner that] takes into account that many consumers will neither need nor want a subsidized converter box,” and avoids “impulse participation” by requiring consumers to apply for program coupons.<sup>18</sup> Nothing in that analysis disqualifies households that receive cable or satellite service. To the contrary, it contemplates that participation will be open

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<sup>16</sup> Conf. Rep. at 201 (emphasis added).

<sup>17</sup> *Id.* Moreover, many cable and satellite subscribers, through second and third sets not hooked up to cable or satellite, “rely on over-the-air broadcasts,” particularly in times of emergency when cable and satellite services are disabled.

<sup>18</sup> *Id.* at 202.

to such households, but concludes that an application process is preferable to a program in which “coupons were automatically sent to every U.S. household,”<sup>19</sup> because consumers should make their own considered decision whether a subsidized set-top box best suits their needs before applying for a coupon under the program.

NTIA’s interpretation of “household” is similarly contrary to common parlance and television industry usage. Nielsen uses the term “households” to mean “[a]n occupied housing unit” or “[a]n individual or group of individuals occupying a house, apartment, group of rooms, or single room.”<sup>20</sup> The FCC ranks markets by Nielsen-defined “households.” Other FCC rules use the same term. In all of these usages, the term includes cable and satellite households. We know of no precedent for construing the general term “household” to exclude cable and satellite households.

*Practical and Emergency Purposes.* It is well recognized that, in many households, more than one set is in use at any particular time. This is true, for example, for the many multi-generational families in the United States, in which grandparents, parents, and children live together under one roof. Under these circumstances, family members often live in separate living quarters or rooms within the house and rely on over-the-air television reception, even while the television in the main family room is connected to cable or satellite service. Under NTIA’s narrow construction of the Act, these family members would not be eligible to obtain converter box coupons. In addition, lower-income households may consist of more than

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<sup>19</sup> *Id.*

<sup>20</sup> Nielsen Media Research, “Glossary of Media Terms & Acronyms,” *available at* [http://www.nielsenmedia.com/nc/nmr\\_portal/t27/glossary.jsp?site=Public](http://www.nielsenmedia.com/nc/nmr_portal/t27/glossary.jsp?site=Public).

one family, each of which might own an analog television. In other households, some may wish to watch English-speaking programs, while others rely on multicultural programming.

These users should not be disenfranchised, whether they are viewing in a home where the first set is an over-the-air analog set or a set served by a MVPD. Also, in terms of consumers' investments, it is clearly inequitable to compensate for some sets being rendered incapable of receiving over-the-air broadcasts (in exclusively over-the-air homes) but not others (in cable or satellite households where only one set is served by cable or satellite).

The importance of communications about national emergencies and homeland security matters is another reason for not unduly constricting eligibility. In emergencies like the hurricanes and floods of the last few years, broadcast stations have often been the only mass medium that has remained operational and, therefore, over-the-air television service has been the only source of emergency news and information. Concerns about homeland security in times of local or national emergencies necessitate that second and third sets in cable and satellite homes be equipped with converters to permit continued reception of over-the-air broadcasts.

Nor can NTIA limit eligibility based on the goal of saving money. That was not among the goals established by the legislation, and in any event it is addressed by Congress' decision to limit the funds set aside for the program and the number of coupons per household. NTIA observes that "market-based solutions" will limit the burden on the funds allocated to the converter box program.<sup>21</sup> NTIA apparently is referring to the fact that some consumers will purchase digital sets or subscribe to MVPD services. Of course, the Joint Industry Commenters hope that consumers will buy digital television sets in order to enjoy the advanced features and

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<sup>21</sup> *Id.*

services of digital television.<sup>22</sup> But nowhere did Congress suggest that the program should be construed narrowly in order to drive consumers to buy digital sets or subscribe to MVPD services.

*Administrative Burdens and Privacy Concerns.* Even if a decision to limit eligibility to over-the-air-only households were not precluded by the statute and contrary to Congressional intent, it would be administratively difficult or altogether unworkable and would undermine NTIA's efforts to implement this critical program. It is not clear how NTIA could police whether or not a particular applicant, in fact, receives cable or satellite service. Such an endeavor might entail intrusion into and surveillance of subscribers' records nationwide, thereby raising serious privacy concerns. In the context of a program whose dominant purpose is to ensure that Americans are not disenfranchised by the digital transition, this process would seriously tax the agency's resources, delay putting boxes in consumers' hands, and lead to unwarranted complexities and administrative costs.

## **2. Economic need**

The NPRM also inquires whether NTIA should establish a standard for economic need as a criterion for program eligibility.<sup>23</sup> The Act includes various restrictions on the use of the coupons,<sup>24</sup> but it does not provide for means-testing. The Conference Report specified where it expected NTIA to adopt regulations concerning application forms, redemption and reimbursement, converter box specification and certification, education efforts, and appeal

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<sup>22</sup> In fact, the FCC requires that all television sets with analog-only tuners include digital tuners as of March 2007. *See* 47 C.F.R. § 15.117.

<sup>23</sup> NPRM at 42068.

<sup>24</sup> *See* n.13, *supra*.

procedures.<sup>25</sup> Not included in this list was any flexibility for NTIA to impose restrictions on the economic status of households eligible for the program, and the statute itself provides no basis for such a limitation. Congress demonstrated that it knew how to limit the scope of the program when it wished to (e.g., up to two coupons per household). When it came to the issue of means testing, it chose not to.

Many of the same reasons that refute NTIA's ability to limit the coupons to exclusively over-the-air households also refute its ability to limit the program to certain Americans according to a threshold income test. In addition to the language of the statute, this unnaturally-constrained implementation of the Act would undercut the goal of viewing continuity, would confiscate consumer investment in analog receivers without due reimbursement, and would create artificial incentives for consumers to subscribe to cable, satellite, or other MVPD services. It would also undermine the ability of over-the-air television in times of emergency to reach all of the public and would force NTIA to undertake burdensome administrative processes that would distract from the agency's core efforts to administer the program.

### **3. Priority**

NTIA properly proposed distributing coupons on a first-come, first-served basis.<sup>26</sup> The Joint Industry Commenters support this proposal, since Congress intended to make the converter box program available to all American households with analog sets not connected to subscription services. It did not include in the statute any basis for distinguishing among applicants or give NTIA authority to put certain applications ahead of others. Accordingly, a

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<sup>25</sup> Conf. Rep. at 202.

<sup>26</sup> NPRM at 42068.

first-come, first-served program should be adopted as the fairest, least burdensome, most expeditious, and simplest way to distribute the coupons.

## **B. Technical Requirements**

As part of its mandate to NTIA, Congress necessarily distinguished between those digital-to-analog converter boxes that are eligible for the coupons and those that are not. Implicit in this distinction is the need to establish requirements for converter boxes to be eligible for program funding. The Joint Industry Commenters agree that this is a unique situation. Because of the resources it has dedicated to the program, and to the digital transition at large, the government has a vested interest in ensuring that, to the maximum extent possible, digital-to-analog converter boxes distributed to consumers as a part of the program work well in the practical circumstances of consumers' homes. The entire program, as well as the transition, could be delayed significantly if consumers reject the converter boxes due to quality, usability, and performance issues. Under these special circumstances, CEA, MSTV and NAB agree that NTIA should adopt minimum performance requirements to protect consumers from poorly functioning devices. Their recommendation for minimum functional and performance requirements for converter boxes is specified in Appendix A.

### **1. MSTV/NAB converter box program**

NAB and MSTV have been particularly concerned with proving the practicality of digital converter boxes achieving high performance without sacrificing cost effectiveness. To respond to the need for effective digital converters to avoid wrenching viewer disenfranchisement as a result of the cessation of analog transmissions in February 2009, in June 2005 MSTV and NAB sought proposals from electronics manufacturers to develop a prototype digital converter box that would achieve high quality, low cost and enhanced ease of use. These goals were quantified in detail in the Request For Quote issued by MSTV and NAB in mid 2005.



After a thorough evaluation process, NAB and MSTV awarded contracts to LG Electronics/Zenith and Thomson/RCA in the fall of 2005. These companies' completed digital converter boxes underwent laboratory and real-world testing during 2006. The results of the MSTV/NAB converter box project demonstrate several points. First, the technical specifications described in Appendix A are clearly achievable in practical products designed to be amenable to production in mass manufacturing quantities. Further, the project results provide tangible evidence that a high-quality, low-cost converter box can be built with measured performance that exceeds the levels specified in the ATSC A/74 Recommended Practice on Receiver Performance in several important areas and consequently can provide reliable reception under a variety of real-world conditions.<sup>27</sup>

## **2. Device eligibility requirements**

The Act requires that converter boxes eligible for coupons under the program include those features “necessary to enable a consumer to convert any [digital television] channel . . . into a format that the consumer can display on [analog] television receivers. . . .”<sup>28</sup>

Consistent with this directive, the NPRM lists six functional requirements for program-compliant converter boxes:

- (a) Appropriately processes all ATSC radio frequency (RF) signals provided to the antenna-only input and then provides output signals in standard definition video for display on an NTSC television receiver/monitor;
- (b) Delivers NTSC composite video and stereo audio to drive NTSC monitors;

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<sup>27</sup> The range of measured performance results for the prototype converter boxes developed by Thomson and LG, compared with A/74 levels, are available on the MSTV website at <http://www.mstv.org/docs/MSTVNAB%20prototypes%20performance.pdf>.

<sup>28</sup> Act at § 3005(d).

- (c) Delivers Channel 3 or 4 switchable (NTSC) RF output for television receivers;
- (d) Complies with FCC requirements for Closed Captioned, Emergency Alert (EAS) and the required parental controls;
- (e) Operable by and includes a remote control; and
- (f) Tunes to all television channels 2-69.<sup>29</sup>

The Joint Industry Commenters agree that these six requirements should be mandatory for program-compliant boxes. With respect to closed captioning, emergency alert system (EAS), and parental controls, as NTIA's NPRM observes, there are existing FCC requirements.<sup>30</sup> Those FCC rules, as currently written, also apply to digital converter boxes. Therefore, NTIA need not and should not promulgate separate rules with respect to these issues.

The NPRM also states that NTIA will take into consideration the cost of the converter box as well as the ease of installation and operation, and proposes to adopt the ATSC Recommended Practice on Receiver Performance Guidelines (ATSC doc. A/74).<sup>31</sup> The Joint Commenters agree that minimum technical performance metrics are necessary in this narrowly tailored program.<sup>32</sup> However, as an industry developed Recommended Practice, A/74 is not written in a format that can be used directly to set eligibility thresholds.

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<sup>29</sup> NPRM at 42070.

<sup>30</sup> *Id.*

<sup>31</sup> *Id.*

<sup>32</sup> The development of ATSC A/74 took a full year and was the result of a collaborative effort of broadcasters, consumer electronics manufacturers, semiconductor manufacturers, and other stakeholders. Begun in mid 2003, A/74 was adopted as a Recommended Practice by the Advanced Television Systems Committee in June 2004. A/74 encompasses performance guidelines in areas including receiver sensitivity, immunity from interfering signals and multipath rejection.

It has also been more than two years since A/74 was published by ATSC. During that period, significant progress has been made; the practicality of achieving A/74 performance levels has been proven in the marketplace; the state-of-the-art has moved forward significantly in some important receiver performance areas; and market-driven performance level expectations have had a chance to develop in the receiver performance areas where A/74 only specifies test procedures and does not specify target performance levels.

With the historical context of A/74, the practical evidence of current industry practice, and the results of the NAB/MSTV digital converter project in mind, the Joint Industry Commenters submit at Appendix A a recommendation for minimum functional and performance requirements for NTIA program-compliant digital converter boxes. These minimum technical requirements will assure that consumers can obtain devices that will provide reliable access to digital television content delivered over-the-air under reasonably challenging reception conditions. The recommended minimum performance requirements in Appendix A take into account measured performance levels achieved in the NAB/MSTV digital converter box program, and reflect the consensus of the broadcast and consumer electronics industries for the specific purpose of the NTIA program.

### **3. Features**

The minimum requirements that NTIA adopts to ensure consumers' ability to effectively receive broadcast signals should not preclude features that improve or enhance the over-the-air digital television viewing experience. Any converter box feature that improves over-the-air reception or enhances the usability or user convenience of the converter box for accessing over-the-air television signals should be allowed within the scope of the NTIA eligibility criteria. As a particular example of this principle, NTIA should avoid overly restrictive rules because they would have the unintended effect of increasing, rather than decreasing, the

costs of the digital to analog converter box by preventing manufacturers from using components that have already been designed and are compliant with generally accepted industry standards. In other words, NTIA's specifications should produce a low-cost converter box consistent with statutory requirements, but overly restrictive rules on functionality of the boxes should be avoided because they may have the unintended consequence of increasing the cost of the box to consumers.

In this regard, certain converter box characteristics and capabilities may extend beyond minimum requirements – that is, NTIA need not require their inclusion – but should not disqualify a device. Various digital television features, such as electronic program guides and the display of PSIP data, are included in a number of the DTV chipsets that have already been developed for mass market use. Because the development work has already been done, including these features in new converter boxes would involve a negligible cost to the manufacturer. In contrast, if the manufacturer were required to disable or delete these features in order to comply with NTIA requirements, there would be a substantial development cost, which would necessarily increase the cost of the devices. In addition to permitting development and manufacturing efficiencies that will lead to lower cost, features in this category would improve consumers' ability to receive or convert a digital signal into a format that can be displayed on an analog television. We highlight here two functions in particular that should not disqualify a converter box. Other features associated with better or more convenient access to over-the-air digital television broadcasts should be treated similarly by NTIA for the purpose of program eligibility.

*Electronic Program Guides* – A particularly compelling function that should not be excluded is found in the case of electronic program guides. The FCC's requirement that

broadcasters transmit PSIP data – including program content details – in their digital signals,<sup>33</sup> as manifested by the FCC’s adoption of the ATSC A/65 standard as mandatory for broadcasters, is premised on the FCC’s conviction that a mechanism for locating digital channels and program content, including multicast channels, is an integral feature of the digital television experience. Digital converter box manufacturers will be subject to powerful, market-based, consumer-driven pressures to offer devices that include electronic program guides displaying PSIP or third-party program data intended to improve the user experience and facilitate access to digital broadcast programming delivered over-the-air.<sup>34</sup> Assuring that devices that process and display electronic program guides are eligible for coupons may increase consumer demand and, therefore, decrease prices as well as being consistent with fulfilling the program’s purposes.

*Smart Antenna Interfaces* – As NTIA notes, reception of digital signals can vary based on a variety of factors, including a household’s location.<sup>35</sup> For this reason, it is also important that manufacturers have latitude, without losing coupon eligibility, to include in their devices the circuitry and connectors associated with the so-called “smart antenna interface” (as defined by the CEA-909 Antenna Control Interface standard).<sup>36</sup> Inclusion of this antenna control interface, when coupled with an appropriate receiving antenna, will promote enhanced viewer access to digital broadcast signals, fuller and more meaningful participation in the converter box

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<sup>33</sup> See 47 C.F.R. § 73.682.

<sup>34</sup> Broadcasters and manufacturers have participated cooperatively in developing the capability for practical PSIP-based services. In accordance with implementing PSIP as specified in ATSC’s A/65 PSIP standard, ATSC published its A/69 PSIP Recommended Practice for Broadcasters in June 2002. This document makes recommendations on the type, amount and frequency of transmission for PSIP data included in broadcast transmissions.

<sup>35</sup> NPRM at 42069.

<sup>36</sup> An abstract of CEA-909 is available at <http://www.ce.org/Standards/StandardDetails.aspx?Id=1418&number=CEA-909>.

program, and a more effective digital transition for a large number of receivers in the United States. For example, in many markets, stations' transmitters are located on different sides of the population center due to separation requirements or other practical considerations outside their control. This can impede consumers' ability to receive digital signals because the antenna must be oriented in two or more different directions to receive all of these signals. Because the smart antenna interface allows automatic electronic steering and signal level control of a "smart antenna" so as to achieve best reception on a channel-by channel basis, consumers should have the flexibility to obtain converter boxes that can interface with smart antennas when they are needed. To ensure that recipients of program coupons receive all of the over-the-air digital signals that serve their communities, manufacturers should be allowed to offer program-compliant converter boxes that include an antenna control interface.

#### **4. Energy standards**

The NPRM also inquires whether NTIA should include energy considerations in its performance standards. NTIA's converter box program is a national, Congressionally authorized program, and it should accordingly incorporate a federal energy standard that is uniform and nationwide. In this regard, the Environmental Protection Agency is developing specifications for a converter box Energy Star<sup>37</sup> program. In its converter box Energy Star

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<sup>37</sup> Energy Star ([www.energystar.gov](http://www.energystar.gov)) is a voluntary, market-driven and national government-industry partnership which creates specifications, including a labeling program, for energy efficient consumer products, including a broad range of consumer electronics. The Energy Star program benefits from strong participation by manufacturers, is well-recognized by consumers, and offers a competitive incentive for energy savings. Energy Star has been a very successful initiative for addressing energy consumption for the consumer electronics industry, and, according to EPA's most recent annual report, the Energy Star program for home electronics and office equipment has saved 41.2 billion kWh of energy and prevented greenhouse gas emissions totaling 8.3 million metric tons of carbon equivalent. Environmental Protection Agency, "Investing in Our Future: ENERGY STAR and Other Voluntary Programs 2004 Annual (continued...)"

program, EPA is expected to rely on CEA's standards for measurement of set-top box energy consumption, CEA-2013.<sup>38</sup> The Joint Industry Commenters strongly support the development of an Energy Star program as the correct approach for addressing converter box energy consumption concerns, and they encourage NTIA to defer to the process commenced by EPA to establish Energy Star standards for converter boxes.

Consumers have come to know and trust the Energy Star label in making electronics purchases, with almost two-thirds of consumers recognizing the Energy Star logo.<sup>39</sup>

Notably, the EPA's Energy Star initiative:

- represents an established and successful government-industry partnership at the national level;
- involves a wide range of industry and government stakeholders;
- focuses on the active and standby energy use of converter boxes;
- will cover 100% of the market for converter boxes; and
- is scheduled for fast-track completion by the end of 2006.

In contrast, state-by-state regulation of converter box energy use would jeopardize the nation's transition to digital television and would seriously interfere with effective NTIA

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Report," at 11 (Oct. 4, 2005), *available at* [http://www.energystar.gov/ia/news/downloads/annual\\_report2004.pdf](http://www.energystar.gov/ia/news/downloads/annual_report2004.pdf).

<sup>38</sup> CEA-2013 is a voluntary industry standard that addresses, among other things, the measurement of power consumption of digital-to-analog converters in the OFF [or standby] state. Currently, development is under way within the CEA standards activities to develop the measurement of power consumption of digital-to-analog converters in the ON state. This work is targeted for completion before the end of this year. An abstract of CEA-2013 is available at <http://www.ce.org/Standards/StandardDetails.aspx?Id=1418&number=CEA-2013>.

<sup>39</sup> Public awareness of Energy Star has jumped to 64 percent of U.S. households, according to a nationwide survey released by the U.S. Environmental Protection Agency on February 23, 2005. Environmental Protection Agency, "National Awareness of Energy Star for 2004: Analysis of CEE Household Survey," at 4 (Feb. 23, 2005), *available at* [http://www.energystar.gov/ia/news/downloads/awareness\\_survey\\_2005.pdf](http://www.energystar.gov/ia/news/downloads/awareness_survey_2005.pdf).

administration of the converter box program.<sup>40</sup> State regulation would also unnecessarily burden the process and could deter the development of effective converter boxes and almost certainly would increase prices.<sup>41</sup> CEA and its members have opposed state regulation of converter boxes, and it has also urged state officials to participate directly in two national initiatives already underway which address converter box energy consumption.

A national standard for converter box energy use would permit consumers to rely on the energy efficiency of the equipment that they purchase through the program. It would also permit manufacturing and engineering efficiencies that would avoid the need for costly re-engineering of converter boxes to meet state-by-state requirements. Such state requirements, in any case, would inappropriately interfere with the nation's DTV transition and the market for converter boxes, as well as threaten the success of the Energy Star program itself. Accordingly, NTIA should defer to the converter box standards under development through the EPA's Energy Star program.

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<sup>40</sup> For example, as NTIA is aware, the California Energy Commission has promulgated a regulation setting a mandatory standard for the energy consumption of converter boxes, defined as "a commercially-available electronic product for which the sole purpose is the conversion of digital video terrestrial broadcast signals to analog NTSC video signals for use by a TV or VCR." The regulation limits converter boxes to eight watts in active mode and one watt in standby mode. Eight other states have decided not to regulate converter boxes, while one state, New York, is considering converter box regulations.

<sup>41</sup> Several groups have expressed concerns to local and national policy makers about the detrimental impact of California's converter box regulation on consumers and business. *See, e.g.,* CEA & NAB, "California's New Energy Consumption Regulation for Digital TV Adapters Threatens to Leave Millions of Californians in the Dark," Press Release, *available at* [http://www.nab.org/newsroom/PressRel/Releases/041106\\_NAB\\_CEA\\_Converters.htm](http://www.nab.org/newsroom/PressRel/Releases/041106_NAB_CEA_Converters.htm) (Apr. 11, 2006) (describing the California Energy Commission's proposal to set energy consumption limits on converters at 8 watts powered up and 1 watt in standby).



### C. Conformity Assessment Process

The NPRM seeks comment on “whether there are existing industry or government organizations engaged in activities that can help speed the development of testing/certification processes. . . .”<sup>42</sup> Rather than developing a new and untested conformity assessment program, the Joint Industry Commenters urge that NTIA leverage the existing resources of the FCC, the longstanding expert agency in this area, to conduct an efficient and accurate conformity assessment process.

Specifically, NTIA should adopt a “verification plus” process, based on the FCC’s present, well-established and well-understood verification procedures.<sup>43</sup> Under these procedures, manufacturers would be responsible for conducting compliance testing at their own facilities or through an independent laboratory contracted by the manufacturer. This process would ensure efficiency and avoid delays that would occur if the FCC or any other third-party entity were required independently to test every converter box.<sup>44</sup>

To ensure the integrity of the program, however, the FCC, most likely through its Office of Engineering and Technology, should have the ability to be involved in the approval process before the devices are released to market. To this end, manufacturers should be required to submit their test results, along with appropriate samples of the tested equipment, to the FCC. The FCC should then review test results to ensure conformity between the converter boxes and

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<sup>42</sup> NPRM at 42070.

<sup>43</sup> See 47 C.F.R. § 2.902 (“Verification is a procedure where the manufacturer makes measurements or takes the necessary steps to insure that the equipment complies with the appropriate technical standards.”).

<sup>44</sup> Because of the unique and time-limited nature of the converter box program, the commenters believe that a “verification plus” process would best ensure the quality of consumer devices included within the program. These comments do not address the viability of such a process in any other context.

the NTIA's performance standards which themselves are based on standards endorsed by or known to the FCC. If the FCC does not alert NTIA and the manufacturer of any problem within 15 days of when the data were submitted, the device should automatically qualify for the program. If the FCC *does* issue notification of a problem, however, it should expedite its own testing and rapidly notify NTIA and the manufacturer of any noncompliance. In this circumstance, the manufacturer would not be allowed to distribute its devices until they are cleared by the FCC. This process is, of course, extraordinary, but it is justified by the special nature of the converter box program.

The Joint Industry Commenters believe that the "verification" component of the "verification plus" process would assure simplicity and efficiency and would permit eligible converter boxes to be released to market without delay and with minimal burden on the FCC and manufacturers. It is also based on a process that the FCC has long used to approve other communications equipment. The "plus" component would also assure that the process remains fair for both consumers and manufacturers. It would protect consumers against noncompliant boxes, and it would ensure that all manufacturers meet the same threshold standards.

### **III. DISTRIBUTION AND EDUCATION**

Finally, NTIA asks for input on the procedures for retail distribution of converter boxes and the steps for educating consumers about the program. The retail industry and service providers to the retail industry have extensive experience in fashioning efficient methods for distributing equipment and processing coupons. The Joint Industry Commenters agree with retailers that an electronic coupon card is the most efficient way to administer the program, as

well as the best way to avoid fraud.<sup>45</sup> Retailers are also well-positioned to advise how to inform consumers about which devices are eligible under the program and about the program's processes more generally. Accordingly, NTIA should rely on that industry's experience in preparing retail distribution procedures and a consumer education program.

The consumer electronics and broadcast industries understand the importance of educating consumers, and they are committed to contributing to the success of the program by continuing and expanding their existing consumer education efforts as the application period for the converter box program approaches. The broadcast and consumer electronics industries have already developed resources to assist consumers in obtaining equipment for the transition and accessing other important information. They will continue to engage in consumer outreach after NTIA adopts regulations for the converter box program, and will work with NTIA to inform consumers how they can apply to receive program coupons as part of their overall program to educate viewers about the transition.<sup>46</sup> NTIA should also coordinate with the FCC and other agencies that have experience in large-scale consumer education campaigns on how best to use the \$5 million that Congress allocated for consumer education.<sup>47</sup>

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<sup>45</sup> Electronic cards have proved successful, for example, in the context of food stamp programs, as well as military and GSA purchasing programs. NTIA should consider the experience of other agencies in administering large-scale programs such as these with the use of electronic payment media.

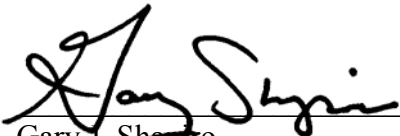
<sup>46</sup> For example, CEA has launched *antennaweb.org*, which helps consumers determine which type of digital television antenna is right for them, and *ceknowhow.com*, the premier training resource for consumer electronics sales personnel, among other consumer education programs. The public can also visit *dtv.gov*, which provides consumer-focused information and links concerning the transition, as well as a DTV shopper's guide and DTV tip sheet.

<sup>47</sup> See Act at § 3005(c)(2)(A).

Congress has been clear and consistent that the digital transition should benefit, rather than harm, the public. It created the consumer-focused digital converter box program to protect the rights of all Americans to continue to receive the benefits of their free, over-the-air television service, notwithstanding the completion of the digital transition. Our two industries, committed to facilitating the transition, submit these consensus views about how best to achieve this goal.

Respectfully submitted,

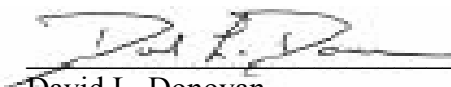
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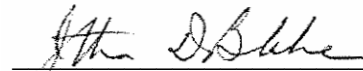
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September 25, 2006

## APPENDIX A

### **Recommendation of CEA, MSTV and NAB for Functional and Performance Requirements for a Digital-to-Analog Converter Box to be eligible for NTIA's coupon program pursuant to the Digital Television Transition and Public Safety Act of 2005**

#### **REFERENCE DOCUMENTS**

ATSC A/74, Receiver Performance Guidelines, June 2004

ATSC A/53E, ATSC Digital Television Standard, Revision E with Amendments No. 1 and No. 2, September 2006

ATSC A/65C, Program and System Information Protocol for Terrestrial Broadcast and Cable (Revision C) With Amendment No. 1, May 2006

Recommendation ITU-R BT.500-11, Methodology for the subjective assessment of the quality of television pictures

ATSC A/69, PSIP Implementation Guidelines for Broadcasters, June 2002

ELIGIBLE CONVERTER BOXES SHALL COMPLY WITH THE FOLLOWING FEATURES AND MINIMUM PERFORMANCE REQUIREMENTS:

#### **1. Decoder**

Equipment shall be capable of receiving and presenting for display program material that has been encoded in any and all of the video formats contained in Table A3 of ATSC A/53E. The image presented for display need not preserve the original spatial resolution or frame rate of the transmitted video format.

#### **2. Output Formats**

Equipment shall support 4:3 center cut-out of 16:9 transmitted image, letterbox output of 16:9 letterbox transmitted image, and a full or partially zoomed output of unknown transmitted image.

#### **3. PSIP Processing**

Equipment shall process and display ATSC A/65C Program and System Information Protocol (PSIP) data to provide the user with tuned channel and program information.

See ATSC A/69 for further guidance.

#### **4. Tuning Range**

Equipment shall be capable of receiving RF channels 2 through 69 inclusive.

#### **5. RF Input**

Equipment shall include a female 75 ohm F Type connector for VHF/UHF antenna input.

#### **6. RF Output**

Equipment shall include a female 75 ohm F Type connector with user-selectable channel 3 or 4 NTSC RF output.

#### **7. Composite Output**

Equipment shall include female RCA connectors for stereo left and right audio (white and red) and a female RCA connector for composite video (yellow). Output shall produce video with ITU-R BT.500-11 quality scale of Grade 4 or higher.

### 8. RF Dynamic Range (Sensitivity)

Equipment shall achieve a bit error rate (BER) in the transport stream of no worse than  $3 \times 10^{-6}$  for input RF signal levels directly to the tuner from -83 dBm to -5 dBm over the tuning range. Subjective video/audio assessment methodologies could be used to comply with the bit error rate requirement.<sup>1</sup> Test conditions are for a single RF channel input with no noise or channel impairment. Refer to ATSC A/74 Section 4.1 for further guidance. (Note the upper limit specified here is different than that in A/74 4.1).

### 9. Phase Noise

Equipment shall achieve a bit error rate in the transport stream of no worse than  $3 \times 10^{-6}$  for a single channel RF input signal with phase noise of -80 dBc/Hz at 20 kHz offset. The input signal level shall be -28 dBm. Subjective video/audio assessment methodologies described above could be used to comply with the bit error rate requirement. Refer to ATSC A/74 Section 4.3 for further guidance.

### 10. Co-Channel Rejection

The receiver shall not exceed the thresholds indicated in Table 1 for rejection of co-channel interference at the given desired signal levels. Refer to ATSC A/74 Section 4.4.1 for further guidance.

**Table 1-** Co-Channel Rejection Thresholds

Type of Interference	Co-Channel D/U Ratio (dB)	
	Weak Desired (-68 dBm)	Moderate Desired (-53 dBm)
DTV interference into DTV	+15.5	+15.5
NTSC interference into DTV	+2.5	+2.5

*Notes:*  
NTSC split 75% color bars with pluge bars and picture to sound ratio of 7 dB should be used for video source.  
ATSC high definition moving video should be used for video source.  
All NTSC values are peak power; all DTV values are average power.

<sup>1</sup> Subjective evaluation methodologies use the human visual and auditory systems as the primary measuring “instrument.” These methods may incorporate viewing active video and audio segments to evaluate the performance as perceived by a human observer. For subjective measurement, the use of an expert viewer is recommended. The viewer shall observe the video and listen to the audio for at least 20 seconds in order to determine Threshold of Visibility (TOV) and Threshold of Audibility (TOA). Subjective evaluation of TOV should correspond with achievement of transport stream error rate not greater than a BER of  $3 \times 10^{-6}$ . If there is disagreement over TOV performance evaluation, it will be resolved with a measurement of actual BER.

### 11. First Adjacent Channel Rejection

The receiver shall not exceed the thresholds indicated in Table 2 for rejection of adjacent channel interference at the given desired signal levels.  
Refer to ATSC A/74 Section 4.4.2 for further guidance.

**Table 2-** Adjacent Channel Rejection Thresholds

Type of Interference	Adjacent Channel D/U Ratio (dB)		
	Weak Desired (-68 dBm)	Moderate Desired (-53 dBm)	Strong Desired (-28 dBm)
Lower DTV interference into DTV	≥-33	-33	-20
Upper DTV interference into DTV	≥-33	-33	-20
Lower NTSC interference into DTV	≥-40	-35	-26
Upper NTSC interference into DTV	≥-40	-35	-26
<i>Notes:</i> NTSC split 75% color bars with pluge bars and picture to sound ratio of 7 dB should be used for video source. ATSC high definition moving video should be used for video source. All NTSC values are peak power; all DTV values are average power.			

### 12. Taboo Channel Rejection

The receiver shall not exceed the thresholds indicated in Table 3 for rejection of taboo channel interference at the given DTV desired and undesired signal levels.  
Refer to ATSC A/74 Section 4.4.3 for further guidance.

**Table 3-** Taboo Channel Rejection Thresholds for DTV Interference into DTV

Channel	Taboo Channel D/U Ratio (dB)		
	Weak Desired (-68 dBm)	Moderate Desired (-53 dBm)	Strong Desired (-28 dBm)
N +/- 2	≥-44	-40	-20
N +/- 3	≥-48	-40	-20
N +/- 4	≥-52	-40	-20
N +/- 5	≥-56	-42	-20
N +/- 6 to N +/- 13	≥-57	-45	-20
N +/- 14 and N +/- 15	≥-46	-45	-20
<i>Notes:</i> ATSC high definition moving video should be used for video source. All DTV values are average power.			

### 13. Burst Noise

Equipment shall tolerate a noise burst of at least 165  $\mu$ s duration at a 10 Hz repetition rate without visible errors. The noise burst shall be generated by gating a white noise source with average power -5 dB, measured in the 6 MHz channel under test, referenced to the average power of the DTV signal. The input DTV signal level shall be -28 dBm.

Refer to ATSC A/74 Section 4.4.4 for further guidance

### 14. Field Ensembles

Equipment shall demonstrate that it can successfully demodulate, with two or fewer errors, 30 of the 50 field ensembles available from ATSC in conjunction with ATSC A/74. Error counts are not expected to include inherent errors associated with the start and end or looping of field ensembles for playback.

Refer to ATSC A/74 Section 4.5.2 for further guidance.

### 15. Single Static Echo

Equipment shall comply with either **CRITERIA A** or **CRITERIA B**, below.

#### **CRITERIA A:**

Equipment shall tolerate a single static echo with the magnitude, relative to a desired DTV signal power of -28 dBm, and delay defined in Table 4.

**Table 4-** Maximum Single Static Echo Delay

Echo Delay	Desired to Echo Ratio
-50 $\mu$ s	16 dB
-40 $\mu$ s	12 dB
-20 $\mu$ s	6 dB
-10 $\mu$ s	5 dB
-5 $\mu$ s	2 dB
0 $\mu$ s	1 dB
10 $\mu$ s	2 dB
20 $\mu$ s	3 dB
40 $\mu$ s	10 dB
50 $\mu$ s	16 dB

#### **CRITERIA B:**

Equipment may demonstrate compliance by tolerating a single static echo with the magnitude, relative to a desired DTV signal power of -28 dBm, and delay defined in Table 5, if the equipment also demonstrates that it can receive 37 of the 50 field ensembles. See **Field Ensembles** requirement.

**Table 5-** Minimum Single Static Echo Delay



Echo Delay	Desired to Echo Ratio
-50 $\mu$ s	16 dB
-40 $\mu$ s	16 dB
-20 $\mu$ s	7.5 dB
-10 $\mu$ s	5 dB
-5 $\mu$ s	2 dB
0 $\mu$ s	1 dB
10 $\mu$ s	2 dB
20 $\mu$ s	3 dB
40 $\mu$ s	16 dB
50 $\mu$ s	16 dB