

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

In the Matter of	)	
	)	MB Docket No. 02-230
Digital Broadcast Copy Protection	)	
	)	
	)	
	)	

**COMMENTS OF THOMSON INC.**

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manufacturers of requiring consumer electronics equipment to recognize and respect the broadcast flag embedded in the digital bit stream.

Thomson believes that the balanced structure of the *NPRM* establishes the framework for a similarly balanced solution needed to complete successfully the DTV transition. Concerns about the potential for unauthorized, instantaneous, global retransmission of high-definition television (“HDTV”) and other high value digital broadcast content over the Internet appear to be chilling the content community’s enthusiasm for releasing such content to broadcasters. The ubiquitous availability of high quality digital programming, especially HDTV, is absolutely critical to the acceleration and ultimate success of the DTV transition. Impediments to the release of such compelling content must be taken seriously and removed. At the same time, consumers simply will not and should not be asked to accept regressive limitations on the home recording and fair use expectations that have developed over the past two decades. Consumers will reject the DTV transition if they perceive it to be no better than – or even worse – than their current analog TV experience. Addressing satisfactorily the legitimate concerns of both *content owners* and *consumers* is imperative to a successful transition.

A broadcast flag-based system is an appropriate and acceptable means of protecting digital broadcast content. Thomson urges the Commission to proceed with care, however, as it considers how such a system should be implemented. The adoption of any digital content protection system must be accomplished in an open, transparent manner that safeguards the interests of consumers, particularly with regard to home recording and fair use expectations, and does not impose undue restrictions or

unnecessary costs upon consumer electronics equipment manufacturers. The Commission must develop a solution that fosters competition and innovation in the manufacturing and computer hardware and software sectors of our economy, as well as in the content production industry. In particular, Thomson urges that implementation of a digital broadcast content protection system must rely on objective technical criteria for the identification and approval of qualifying technologies. To these ends, draft legislation proffered by the bipartisan staff of the House Committee on Energy and Commerce stands as a model for the Commission as it constructs rules implementing a broadcast flag-based content protection system. In short, the solution must not be worse than the problem.

Importantly, if the Commission moves forward to implement a broadcast flag-based digital content protection system, it should clarify that no device obligation exists where the broadcast flag is not detected. Moreover, any mandate on devices that requires content protection to begin “at the point of demodulation” raises serious competition and cost concerns and should be modified to require protection to begin “upon reception.”

## **II. STATEMENT OF INTEREST**

With sales of \$9.3 billion in 2001, Thomson provides a wide range of video (and enabling) technologies, systems, finished products and services to consumers and professionals in the entertainment and media industries. To advance and enable the digital media transition, Thomson has five principal divisions: Digital Media Solutions, Displays and Components, Consumer Products, Patents and Licensing, and New Media

Services. The company distributes its products under the Technicolor, Grass Valley, THOMSON and RCA brand names.

Thomson is the manufacturer of RCA home entertainment products and the owner of Technicolor, a service provider to the film industry. As the leading manufacturer and marketer of consumer entertainment products, and as a trusted supplier of creative and home entertainment services to Hollywood, Thomson is well positioned to comment on how best to expand digital entertainment while preserving both home recording and fair use expectations of consumers and the legitimate rights of copyright holders.

With its leadership position in RCA television products, its extensive professional broadcast division, and as the world's largest replicator of movies on DVD and VHS tape, Thomson serves a diverse array of customers, including content owners such as Fox, Disney and Universal, as well as retail giants RadioShack, Circuit City, Best Buy and Wal-Mart.

Of course, millions of consumers also are Thomson's customers, with virtually every home in America having an RCA product.

As one of the largest employers in the entertainment industry, Thomson's reach spans the United States, with thousands of employees in more than two dozen different communities. Its biggest concentration of employees live and work near Indianapolis, Indiana, and just outside of Hollywood, California.

Thus, Thomson has a unique position in both the content and consumer electronics industries: by helping the creative community reach the public through Technicolor's trusted film and video services; and by designing and selling new and

innovative electronics products that showcase the wonders of digital technology to both entertain and inform millions of people.

**III. CONTENT PROTECTION IS NEEDED FOR HDTV AND OTHER HIGH VALUE DIGITAL CONTENT; HOWEVER, THE SOLUTION MUST NOT BE WORSE THAN THE PROBLEM**

As a leader in the DTV transition, Thomson, like so many others, has urged repeatedly that an abundant amount of high quality digital content, especially HDTV, is essential to driving deeper consumer acceptance of digital television. The success or failure of the DTV transition depends on programming living up to consumers' expectations of a quantum leap in video and audio clarity, reflected in HDTV, and, ultimately, in viewers' ability to choose to interact with programming in novel and exciting ways. Accordingly, a genuine impediment to making large amounts of high value content available to consumers will, in turn, be an impediment to the transition's success and must be eliminated.

Content owners need an appropriate level of assurance that their intellectual property is protected before they make investments in the production and distribution of HDTV and other high quality digital content. They will not have that certainty unless there is genuine and effective protection against unauthorized retransmission of digital content to the public over the Internet. Thomson would suggest that, the higher the value, and the greater the innovation and creativity of the content offered (*e.g.*, high-definition feature films, unique and special event programming, live sporting or entertainment events), the stronger the case for its protection, particularly since the

Commission's involvement in content protection stems from its goal to accelerate the DTV transition.<sup>2</sup>

Broadcast networks are gradually increasing their HDTV offerings, in part in response to Chairman Powell's April 4, 2002, request for voluntary commitments to HDTV prime time broadcasts.<sup>3</sup> Both ABC and NBC have now joined CBS and public broadcasters in providing significant HDTV programming in prime time (including late night). The major broadcast networks also are offering top tier sporting events in HDTV, such as last year's Winter Olympics and the NCAA Basketball "Final Four" Tournament. In many such instances, this increased HDTV menu is the product of innovative, collaborative agreements between broadcast networks and major consumer electronics manufacturers. Even though three of the four major broadcast networks already are stepping up to the HDTV plate – offering approximately 50 percent of their prime time programming in HDTV – they, as well as FOX (which has focused on widescreen standard-definition digital programming), are rightfully insistent that a digital content protection system is essential to continued, sustained progress toward the conversion from analog to digital television.

At the same time, consumers are entitled to – and must – feel confident that a decision to make the leap to digital will not be a leap *backward*. Consumers are expecting that digital television will not only be as good as, but that it will be better than, their analog broadcast television experience is today – not just in terms of picture quality

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<sup>2</sup> See, *NPRM* at 1.

<sup>3</sup> See, Letters from The Honorable Michael K. Powell to The Honorable Ernest F. Hollings and W.J. "Billy" Tauzin, *Proposal for Voluntary Industry Actions to Speed the Digital Television Transition*, (April 4, 2002) at ¶1.

but also in terms of their ability to store, move, play back and otherwise interact with over-the-air content. Home recording has become more than a feature that consumers expect to enjoy; it is an indispensable complement to the TV viewing experience for the vast majority of Americans. Indeed, approximately 94 percent of U.S. households own a VCR.<sup>4</sup> Americans have come to rely on home recording for time-shifting to accommodate increasingly busy family schedules and the prevalence of two-working-parent homes. They also use home recording to recognize the special nature of extraordinary programming by creating home libraries of memorable episodes or sports events for their personal use. The VCR enables consumers to engage in rudimentary manipulation of stored content to fit compressed viewing schedules or skip familiar – or, in some cases, objectionable – content. These baseline expectations that have evolved in the analog world must be met or exceeded in the digital world if the transition is to succeed. This is especially true given the fact that consumers historically have been able to copy freely (for legal and non-commercial purposes) over-the-air broadcast television content.

Today, the VCR has been joined by a family of new products such as the personal video recorder (“PVR”) and the DVD player and recorder. Thomson is working on new technologies that will link together digital entertainment products in a Personal Home Network. This is the “VCR of the future” – the ability to easily record shows and watch them anywhere in one’s home, at any time. The shift from analog to digital video technology is compatible with and must facilitate the kind of interoperability and full

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<sup>4</sup> *Source:* Consumer Electronics Association. Thomson, alone, sold more than 55 million blank VHS tapes in 2001.

featured enhancements inherent in the Personal Home Network, allowing consumers to time shift, keep archival copies, move content to various devices, and preserve favorite content for personal use as long the consumer wishes.

In short, the need to protect high value DTV content from unauthorized retransmission over the Internet must be balanced with the need to protect consumers' fair use expectations. Failure to strike the right balance risks alienating the consumer from the DTV transition. Such a solution would be worse than the problem it was intended to cure.

**IV. THE BROADCAST FLAG IS AN APPROPRIATE CONTENT PROTECTION TOOL FOR UNENCRYPTED OVER-THE-AIR BROADCASTS. HOWEVER, A MANDATE THAT CONSUMER ELECTRONICS PRODUCTS RECOGNIZE AND REACT TO THE BROADCAST FLAG MUST BE IMPLEMENTED IN A MANNER THAT PROTECTS COMPETITION AND INNOVATION AND DOES NOT IMPOSE UNDUE BURDENS ON MANUFACTURERS**

The Commission asks whether the broadcast flag is “the appropriate technological model” to protect DTV content, and whether rules should be adopted addressing compliance, robustness and other enforcement issues that will arise.<sup>5</sup>

The broadcast flag itself, a series of bits in the digital bit stream carrying a single command, already has been adopted by the Advanced Television Systems Committee (“ATSC”) and made a component of the ATSC DTV Standard.<sup>6</sup> Standing alone, however, the broadcast flag is powerless. It only becomes a trigger for a content protection system if consumer electronics devices (including receiving devices, such as DTVs, PVRs and PCs with an ATSC tuner card; and downstream sink and playback

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<sup>5</sup> *NPRM* at 4.

<sup>6</sup> ATSC DTV Standard A/53B (August 7, 2001).

devices, such as DVD players or computer processors) are obligated to recognize and react to it when it appears in the broadcast digital bit stream. This shifts the focus to the nature and extent of FCC regulation of consumer electronics equipment incident to transmission of the broadcast flag.

There are significant technical issues that the Commission should address in any implementation of the broadcast flag. In addition, there are critical licensing issues, including compliance and robustness rules, for any particular content protection technologies, such as DTCP (5C) or alternatives thereto, to be used in conjunction with the broadcast flag, that will affect competition and innovation both in digital video technologies and in digital content protection technologies, as well as manufacturing costs.<sup>7</sup> Finally, the Commission must promulgate encoding rules to safeguard consumers' fair use expectations and reaffirm the "copy freely" status of free, over-the-air broadcasting in the digital era.

In light of this plethora of considerations to balance, the Commission might consider taking a "cost-benefit" approach in considering the adoption and implementation of a digital content protection system triggered by the broadcast flag. Such an approach would weigh the benefits derived from the technology – *i.e.*, the scope of protection afforded content – against its implications for consumer fair use, manufacturing costs, competition and future innovation.

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<sup>7</sup> In addition to the obvious direct product costs of implementing any broadcast flag regimen, Thomson is concerned with any adverse impacts on other costs of doing business. For example, manufacturers need to be able to efficiently procure test equipment and development parts (both domestically and overseas) in order to design their products. Manufacturers also need to be able to continue to provide replacement parts for field repair and service, and be able to design products that can be repaired. Thomson urges the Commission to consider these "secondary costs" in any implementation of a broadcast flag regime.

Importantly, the inevitable vulnerability of any digital content protection technology, including the broadcast flag, to hacking, warrants that any effort to combat commercial piracy and/or unauthorized retransmission to the public rely as much, if not more, on the established, and formidable, protections already built into the law. The legal ramifications associated with these activities, even more than technological tools, should continue to be the *first* line of defense for content owners.

**A. Key Elements of a Broadcast Flag Solution**

**1. The House Energy and Commerce Committee Staff Draft Provides Very Helpful Guidance To The Commission In Implementing The Broadcast Flag**

As the Commission is aware, since its release of the *NPRM*, bipartisan staff of the House of Representatives Committee on Energy and Commerce – a Committee with a well-established interest and expertise in the digital television transition – released draft legislation addressing, *inter alia*, implementation of a digital broadcast content protection system.<sup>8</sup> The *Staff Draft* balances deftly the competing imperatives of: (1) adequately protecting digital broadcast content from unauthorized retransmission to the public; (2) making the DTV transition as consumer-friendly and consumer-desirable as possible; (3) protecting competition and innovation for digital devices and content protection technologies; and (4) protecting against unreasonable and unnecessary burdens on manufacturers.<sup>9</sup> Specifically, the *Staff Draft*, in directing the

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<sup>8</sup> “Staff Discussion Draft, H.R. \_\_\_, To require the Federal Communications Commission to take actions necessary to advance the transition to digital television service, and for other purposes,” (Rel. Sept. 18, 2002) (“*Staff Draft*”).

<sup>9</sup> Although the *Staff Draft* proposes to ban all analog outputs by a date certain (presumably to address the so-called “analog hole” problem, whereby retransmission of unprotected digital content is

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FCC to implement a broadcast flag regime, would: (1) protect consumers' ability to enjoy the full functionality of equipment intended for legal, non-commercial use,<sup>10</sup> (2) prohibit technology licensing terms, including any associated compliance, robustness and encoding rules, that would diminish device functionality;<sup>11</sup> (3) require reliance upon objective technical criteria (as established by the Commission in an open and public process), for identifying acceptable content protection technologies;<sup>12</sup> (4) limit the scope of any protection system aimed at the Internet to retransmissions to the public at large,<sup>13</sup> (5) require technology licensing terms to be narrowly tailored;<sup>14</sup> (6) prohibit content protection technologies that place unnecessary or unreasonable burdens on product design or manufacture, or that stifle innovation;<sup>15</sup> and (7) provide for an expedited process, including self-certification, by which DTV content protection technologies are approved.<sup>16</sup>

In short, while recognizing, as Thomson does, the need to mandate digital broadcast content protection, and the appropriateness of a broadcast flag-triggered content protection solution to accomplish that task, key congressional leaders recognize

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possible through the use of analog outputs and an analog-to-digital conversion process), Thomson is heartened that such a course – due to its impact on consumers vis-à-vis legacy equipment – appears to have met with strong resistance in Congress, including from House Energy and Commerce Committee Chairman Tauzin. See, Bill McConnell, DTV Picture Far From Clear, Broadcasting & Cable Online September 30, 2002. See also, Consumer Issues at Forefront of DTV Hearing, Communications Daily, September 26, 2002, at 2.

<sup>10</sup> *Id.* at new Section 340(b)(2)(C) and (b)(5)(A).

<sup>11</sup> *Id.*

<sup>12</sup> *Id.* at new Section 340(b)(2) (see also, discussion at IV(a)(2) *infra*).

<sup>13</sup> *Id.* at new Section 340(b)(2)(A).

<sup>14</sup> *Id.* at new Section 340(b)(5)(B).

<sup>15</sup> *Id.* at new Section 340(b)(2)(B).

<sup>16</sup> *Id.* at new Section 340(b)(1).

fundamental principles that must be adhered to in order to ensure a successful transition for all parties, especially consumers. Accordingly, Thomson urges the Commission to draw upon the *Staff Draft* as it formulates any rules implementing a broadcast flag-based content protection system.

## **2. Implementation Of A Digital Broadcast Content Protection System Must Rely On Objective Technical Criteria For The Identification And Approval Of Qualifying Technologies**

The Commission seeks comment on “how particular technologies would receive approval for use in consumer electronics devices for digital broadcast copy protection purposes.”<sup>17</sup> As the Commission notes, members of the Broadcast Protection Discussion Group (“BPDG”) were unable to reach a consensus on the criteria by which technologies would be measured for inclusion on so-called “Table A” – *i.e.*, the list of approved technologies for a broadcast flag regime.<sup>18</sup>

The approval of digital content protection technologies to work together with a broadcast flag must rely on a set of objective, technical criteria that are established and implemented in an open and transparent process, as envisioned in the *Staff Draft*.<sup>19</sup> In the interests of promoting competition, a number of broadcast flag-related content protection technologies, hopefully including Thomson’s own *SmartRight* system (discussed below), should be deemed acceptable, and competition for inclusion on any list of viable technologies should, and likely will, be fierce. It is therefore essential that the Commission reject any attempt by the proponents of any particular content

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<sup>17</sup> *NPRM* at 7.

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

<sup>19</sup> *Staff Draft* at new Section 340(b)(2).

protection technology to tilt the broadcast flag process, including through any associated licensing regime, to obtain predetermined acceptance of their technology. Progress toward implementing a broadcast flag–based solution for needed protection of HDTV and other high quality digital programming need not come at the expense of competition and innovation in video and content protection technologies.

**a. Thomson’s *SmartRight* Technology Provides A Simple, Renewable, End-to-End Digital Content Protection Solution For Any Delivery Platform.**

Thomson is actively involved in the development of new content protection technologies through its *SmartRight* initiative. With the *SmartRight* system, content is kept scrambled as required throughout the consumer's personal home network until it is displayed on a rendering device, which descrambles the content using a renewable security module, such as a "smart card." This simple method provides end-to-end encryption security, and enables consumers to access content from any device of their personal private network.

*SmartRight* is a copy protection system for digital home networks which, combined with conditional access systems or digital rights management systems, provides an effective end-to-end solution for the protection of digital content. Moreover, *SmartRight* can protect content from any kind of source, including over-the-air and pre-recorded content.

The *SmartRight* system, first created by Thomson, is designed to facilitate the business model for digital content delivery of all parties concerned, including content owners, and to enable the creation of value-added models. In fact, *SmartRight* is gaining an increasing amount of industry support and is now an initiative that includes

other consumer electronics manufacturers (Pioneer), conditional access system providers (e.g., Canal+ Technologies and Nagravision), “smart card” manufacturers (Gemplus and SchlumbergerSema); IC manufacturers (STMicroelectronics and Micronas) and others (including SCM Microsystems, a provider of technology for smart card readers and security modules). Indeed, SmartRight is an initiative open to any interested party.

### **3. The Commission Should Clarify That No Device Obligation Exists Where the Broadcast Flag is Not Detected**

The Commission seeks comment on whether a mandate is needed on the transmission end, for instance to require “broadcasters and content providers to embed the ATSC flag or another type of content control mark with digital broadcast programming...”<sup>20</sup> Thomson believes no such mandate is necessary, and that whether and when to embed the broadcast flag is a matter best left to broadcasters and content owners.

However, to the extent certain digital content is transmitted *without* a broadcast flag, any regulations adopted by the Commission should clarify that any and all obligations on licensed devices *do not apply* in this circumstance. Content owners have concurred in the view that no obligation need apply when the broadcast flag is not detected, and Commission clarification on this point will ensure against any potential for confusion, as well as avoid the imposition of unnecessary and burdensome requirements on manufacturers.

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<sup>20</sup> *NPRM* at 5.

**4. A Mandate On Devices That Requires Content Protection To Begin “At The Point Of Demodulation” Should Not Be Adopted Because It Requires A Level Of Component Integration That Could Be Anticompetitive And Could Add Unnecessary Costs to DTV Receivers**

The notion that digital broadcast content protection should begin at the point of “demodulation” of the ATSC signal, *i.e.*, where a broadcast flag is detected,<sup>21</sup> is of concern, as it could have an unnecessarily adverse impact on competition in the consumer electronics equipment sector and could drive up the costs of implementing a broadcast flag-based digital content protection system. Thomson believes, however, that this concern can be easily remedied.

The process of “reception” of DTV signals can be roughly broken down according to “front end” and “back-end” processing. At the front end are the device’s tuner (which selects the channel) and demodulator (which performs, among other things, multipath equalization/de-ghosting and error correction). At the back-end are the integrated circuits – including the demultiplexer, microprocessor and audio and video decoders – which interact with the transport stream as output from the demodulator. Unlike the front-end processing parts, which are specific to the service being received (*i.e.*, ATSC tuner for over-the-air signals; QAM for cable, QPSK for satellite), back-end integrated circuits share an enormous degree of technical commonality across video delivery platforms.<sup>22</sup> As a result, manufacturers commonly combine these back-end functions onto a single integrated circuit, which then can be combined with different types of

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<sup>21</sup> *Id.* at 6. See also, *BPDG Final Report* at 11.

<sup>22</sup> This commonality is possible because all digital “transport streams,” *i.e.*, what a digital signal becomes after its demodulation, are very similar regardless of the signal’s native delivery format.

tuner/demodulator modules (ATSC, cable, satellite) depending on the service to be received.<sup>23</sup> Competition in the design/manufacture of ATSC demodulators is intense, and demodulator intellectual property is owned by different companies.

The actual job of *responding* to a broadcast flag, after it is received and passed through the front end reception components, is accomplished by the back-end integrated circuits – specifically: the demultiplexer, which first filters out the broadcast flag from the rest of the transport stream; and the microprocessor, which then interprets the flag and relays instructions on how the device should respond thereto.<sup>24</sup> Thus, any device responsive to the broadcast flag must have a tuner, a demodulator, a demultiplexer, and a microprocessor.<sup>25</sup>

Therefore, to say that encryption must begin at the point of demodulation implies that the demodulator also has a demultiplexer and a microprocessor, *i.e.*, the actual components that act upon the flag. This requires the integration of all of these functions – both front-end and back-end – on a single integrated circuit. Today, no such integrated circuits exist. Moreover, while there may be such complex integrated circuits available in the future, they will only be available from companies that have the intellectual property for all of these technologies. Today, there are only two such companies. By requiring this level of integration, a “protect at demod” approach will

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<sup>23</sup> Additionally, the commonality in transport stream processing across delivery platforms permits the ATSC broadcast flag to work when broadcast signals are carried by either cable or satellite systems. *NPRM* at 6.

<sup>24</sup> Some form of protection could be required, vis-à-vis robustness rules, for the content stream as it passes from the demodulator to the demultiplexer. However, such rules must not impose the same burdens and costs as a “protect-at-demod” approach.

<sup>25</sup> The broadcast flag does not impose upon the video or audio decoders.

stifle competition and innovation in VSB demodulator technology (which, among other things, is needed to continually improve reception of over-the-air DTV signals) and will slow the affordability curve of digital television receivers.

Avoiding these outcomes could be quite simple. Thomson suggests that the Commission, assuming it implements content protection rules based upon a receiver-end encryption model, (1) require that content protection “begin upon reception,” and (2) define reception to include all processing of the broadcast flag, including that which might be performed by multiple integrated circuits.

## **V. CONCLUSION**

The lack of a digital broadcast content protection system is obviously chilling content owners’ willingness to release their works on over-the-air digital television, and thus hampering the transition to DTV. Accordingly, Thomson believes that adoption by the Commission of a broadcast flag-triggered digital content protection system is a reasonable approach to address this problem. However, in implementing the broadcast flag, the Commission must ensure that the cure is not worse than the problem. A mandate that consumer electronics products recognize and react to the broadcast flag must be implemented in a manner that protects consumers’ fair use and recording expectations, preserves competition and protects innovation, and does not impose undue burdens on manufacturers. To these ends, the *Staff Draft* stands as a model for the Commission as it constructs rules implementing a broadcast flag-based content protection system. Implementation of a digital broadcast content protection system must rely on objective technical criteria for the identification and approval of qualifying technologies. Again, the *Staff Draft* serves as a extremely useful model in this regard.

Finally, the Commission should clarify that no device obligation exists where the broadcast flag is not detected and that any mandate on devices to recognize and react to the broadcast flag should commence "upon reception," rather than "at the point of demodulation" to allay serious competition and cost concerns.

Respectfully submitted,

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