

*Final Report of the Co-Chairs of the  
Broadcast Protection Discussion Subgroup  
to the Copy Protection Technical Working Group*

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## **BPDG: FINAL REPORT TO CPTWG**

### 0. Introduction

0.1 This report is presented by the co-chairs of the Broadcast Protection Discussion Group (“BPDG”) to the Copy Protection Technical Working Group (“CPTWG”), to summarize the work and conclusions of the BPDG in evaluating technical solutions for preventing unauthorized redistribution (including unauthorized redistribution over the Internet) of unencrypted digital terrestrial broadcast television (referred to hereinafter as “DTV”).

0.2 As detailed in sections 1-3 of this Report, this effort has focused primarily upon the evaluation of a particular proposed technical solution using a “broadcast flag,” and the creation of compliance and robustness requirements that would effectuate this solution when implemented in consumer products. This proposed solution, and the work undertaken by the BPDG, was intended only to address means by which DTV content could be protected against unauthorized redistribution, while minimizing the burden on implementers and, for some participants, avoiding unnecessary interference with other content protection technologies. Other than necessarily requiring that DTV content continue to be protected against unauthorized redistribution when copied or output in digital form, the proposed technical solution does not interfere with the ability of consumers to both make copies of DTV content, and to exchange such content among devices connected within a digital home network.

0.3 Many of the provisions of the Compliance and Robustness Requirements document attached to this Report reflect fundamental points of agreement among participants. The points of agreement are summarized in section 4.

0.4 The BPDG did not reach complete agreement on all necessary elements of the Compliance and Robustness Requirements, however, due to principled differences of view among the participants (and, in certain cases, because of time constraints). The points as to which general agreement was not reached are discussed in section 5.

0.5 A number of questions raised in the course of the BPDG discussions related to enforcement and related policy issues. There was general agreement that such questions, while highly pertinent to any decisions as to how a broadcast protection method should be implemented, are not appropriately addressed by the BPDG. Anticipating that this would be the case, the BPDG Work Plan (described below) recommended establishment of a parallel group. Section 6 of the Report suggests a number of significant issues that could be discussed and considered by such parallel group.

1. Background

1.1 Work undertaken by the CPTWG beginning in 1996 focused primarily upon means for content owners to protect physical media distributed to the public in encrypted form, and means by which consumer electronics and computing devices could perpetuate protections applied to encrypted content delivered to the consumer by such physical media and by cable and satellite transmission. Under current FCC regulations, most digital terrestrial television broadcasts are delivered in unencrypted form (“in the clear”). Thus, unlike prerecorded encrypted digital media such as DVD, or premium digital cable and satellite video transmissions delivered via conditional access, there may not be any licensing predicate to establish conditions for the secure handling of such content. Consequently, consumer products can be legally made and sold that allow this unprotected DTV content to be redistributed (including via unauthorized redistribution over the Internet) without authorization from the copyright holders.

1.2 In the course of negotiations between major motion picture studios and the Digital Transmission Licensing Administrator LLC (“DTLA”), relating to the licensing of DTLA’s “DTCP” technology for protecting encrypted conditional access digital video content within local digital network environments, the studios requested that the DTCP license also require licensed products to apply DTCP to protect DTV. Although the DTLA stated that it could not impose such requirements through the DTCP license, the DTLA companies stated that they would be willing to contribute their efforts to a multi-industry effort to develop solutions for protecting DTV against unauthorized redistribution.

1.3 In May 2001, an Advanced Television Standards Committee (“ATSC”) subcommittee began consideration of a proposal from Fox Broadcasting (News Corporation) to define in the ATSC technical standards for DTV a “Redistribution Control” descriptor. This Redistribution Control descriptor proposal was accepted, by ballot of the ATSC members, as part of the ATSC Standard as of April 2, 2002.

1.4 Also in May 2001, Fox developed and presented to the member companies of DTLA a technical proposal whereby this Redistribution Control descriptor, when detected in ATSC transport streams, could be used to signal protection of broadcast audiovisual content against unauthorized redistribution (including unauthorized Internet redistribution).

1.5 By a joint letter dated November 26, 2001, the Consumer Electronics Association and Information Technology Industry Council invited the Motion Picture Association of America and its member companies to join in a request to the CPTWG to form a group to explore a technical solution to the unauthorized redistribution of DTV content over the Internet. Following an exchange of letters, the three trade associations agreed to support such a collaborative effort under the aegis of the CPTWG.

1.6 On November 28, 2001, representatives of the five member companies of DTLA – Intel Corporation, Hitachi Ltd., Matsushita Electric Industrial Co. Ltd., Sony Corporation and Toshiba Corporation (collectively also referred to as the “5C” companies) – described in a presentation to the CPTWG a refined version of the Fox technical proposal using the ATSC Redistribution Control descriptor as a “Broadcast Flag” (and possibly a “consensus watermark” as a “Broadcast Watermark”) to signal protection for DTV content against such unauthorized redistribution. A

copy of the presentation, entitled “Protecting Against Unauthorized Redistribution of Digital Broadcast Content” is attached to this report at Tab A.<sup>1</sup> The presentation suggested that DTV content be protected beginning at the point of demodulation of the ATSC stream, so as to assure that DTV content in usable form would be securely routed to ATSC transport stream processors that would read the Broadcast Flag (or, at the election of the implementer, screen for the “Broadcast Watermark”).<sup>2</sup> If the flag (or watermark) were determined by the ATSC transport stream processor to be present, then the DTV content would be securely delivered to protected digital output and recording technologies. If the flag (or watermark) were determined by the ATSC transport stream processors not to be present, then no further protection need be applied to the DTV content. The presentation outlined possible requirements for compliant devices, and rules to ensure robust implementation of the suggested protection system.<sup>3</sup>

1.6 The five companies recommended that a group be formed, including representatives from all industries that would potentially be affected by the proposal, for the purpose of evaluating the suitability of this technical proposal for protecting DTV content and determining whether there was substantial industry support for the proposal as a solution to the redistribution problem.

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<sup>1</sup> The presentation is available from the CPTWG website at <http://www.cptwg.org/Assets/TEXT%20FILES/ProtectingWDC9911-01.PPT>.

<sup>2</sup> The presenters proposed leaving this decision to the implementer such that products that included watermark detection for other purposes might leverage this capability, but stated that their preference was to make the broadcast flag implementation sufficiently robust so that watermark detection (which would likely be more expensive and burdensome than flag detection) should remain optional.

<sup>3</sup> It was suggested that a more effectual technical and enforcement solution would be to encrypt DTV content at the source (*i.e.*, the transmitter). Given the current political and business environment, this approach was rejected by motion picture studios and broadcasters, as well as by representatives of consumer electronics manufacturers, in favor of the approach reflected in the presentation.

## 2. The Work of the BPDG

2.1 In a meeting the afternoon of November 28, 2001, approximately 70 representatives of the consumer electronics, information technology, motion picture, cable and broadcast industries agreed to form the Broadcast Protection Discussion Group. License Management International LLC established an email reflector to promote discussions of any technical issues.<sup>4</sup>

2.2 A proposed Work Plan for the BPDG was drafted and circulated to BPDG, which stated the BPDG's Charter, in pertinent part, to be as follows:

“to evaluate proposed solutions for (a) the secure signaling of protection for unencrypted digital terrestrial broadcast content against unauthorized redistribution outside of the personal digital network environment (e.g., the home or the automobile)<sup>5</sup>, and (b) the secure handling of such content by products when such signaling has been applied.”

This proposal was discussed by the BPDG participants during a conference call on December 18, 2001. A copy of the Work Plan is attached to this Report at Tab B.<sup>6</sup>

2.3 The Work Plan proposed that co-chairs for the group be selected from multiple affected industries. Accordingly, during the December 18, 2001, conference call, co-chairs from the consumer electronics, information technology and motion picture industries were nominated, and approved without objection.

2.4 On January 15, 2002, the co-chairs of the CPTWG reviewed the statement of charter in the Work Plan and approved the BPDG as a working group under the aegis of the CPTWG.

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<sup>4</sup> As of the date of this Final Report, more than 230 individuals (representing more than 70 consumer electronics, information technology, motion picture, broadcast, cable and satellite companies and associations, had subscribed to the bpdg-tech reflector. While originally conceived as a multi-industry forum comprised of representatives of affected industries, as such list indicates, BPDG participation was in fact open to any group or individual wishing to participate, with one exception. In keeping with longstanding policy and practice of the CPTWG, there was general agreement to exclude journalists in their capacity as such from BPDG meetings and conference calls because it was felt that such participation would have a "chilling effect" on the discussions. However, each BPDG participant was left wholly free to speak to journalists outside of BPDG proceedings. Several BPDG participants objected to this exclusion on public policy grounds, but others responded that public policy was not involved, since the BPDG is a wholly private discussion group with no official or unofficial governmental standing.

<sup>5</sup> See section 5.1 with respect to disagreements regarding the appropriateness and meaning of the phrase “outside of the personal digital network environment (e.g., the home or the automobile).”

<sup>6</sup> The BPDG Work Plan suggested that a “parallel group” be constituted, outside of BPDG, to address means by which any Compliance and Robustness Requirements applicable to the Broadcast Flag solution could be implemented and enforced, and policy issues relating thereto. This parallel group has been established and has held several meetings. A separate email reflector for this parallel group also has been established, and can be joined by sending an email message to [reflector@lmicp.com](mailto:reflector@lmicp.com), and including in the body of the message the sender's name and a request to subscribe to the “policyg list”. As of the date of this report, more than 135 individuals (representing more than 50 companies and associations) have subscribed to this reflector.

2.5 Certain participants have noted that while the Broadcast Flag proposal addressed protection in the digital domain beginning at the point of demodulation, it did not address the “analog hole,” whereby unprotected video in analog form can be converted by consumers to digital form without the protection originally applied to the digital content (the comments of one company, Digimarc, in this regard are attached to this Report at Tab O). Participants have generally recognized that because this issue applies to a range of content far broader than DTV, the BPDG would not be an appropriate forum in which to address it.

2.6 Certain participants opposed the premise on which the BPDG was formed, expressing the view that no technological restrictions on the handling of broadcast signals should be imposed. Comments from those parties are attached at Tab N.

2.7 The Work Plan proposed March 31, 2002, as a target for completing an evaluation of the Broadcast Flag proposal. The target was substantially met with respect to the fundamental elements of the broadcast flag proposal. Notwithstanding, due to the complexity of certain issues raised by BPDG participants, the target was extended such that the work of the BPDG would be completed prior to the June 5, 2002, meeting of the CPTWG.

2.8 The BPDG held 16 meetings as follows:

- 2.8.1 November 28, 2001 organizational meeting in Los Angeles
- 2.8.2 December 18, 2001 teleconference
- 2.8.3 January 15, 2002 meeting in Los Angeles
- 2.8.4 January 24, 2002 teleconference
- 2.8.5 February 7, 2002 teleconference
- 2.8.6 February 21, 2002 teleconference
- 2.8.7 February 27, 2002 meeting in Los Angeles
- 2.8.8 March 14, 2002 teleconference
- 2.8.9 March 21, 2002 meeting in Los Angeles
- 2.8.10 March 27, 2002 teleconference
- 2.8.11 April 1, 2002 teleconference
- 2.8.12 April 3, 2002 meeting in Los Angeles
- 2.8.13 April 15, 2002 teleconference
- 2.8.14 April 17, 2002 meeting in Los Angeles
- 2.8.15 April 29, 2002 meeting in Los Angeles
- 2.8.16 May 23, 2002 teleconference

2.9 The Co-Chairs recognize that the work of the BPDG has been undertaken in a compressed timeframe, reflecting the concern of content providers over the harmful effects of allowing continued broadcast of DTV without protection against unauthorized redistribution, the concern of certain members of Congress that the transition to DTV has stalled and the assertion by certain content providers that broadcast protections would contribute to the more timely deployment of high value content over DTV. Although general agreement was rapidly reached in support of fundamental elements of the proposal, addressing many of the detailed aspects of implementing the proposal proved to be more challenging and, therefore, time-consuming. Consequently, it has been difficult for those making technical and drafting proposals to unfailingly meet the targeted dates for distribution of such proposals, so as to give all participants

ample advance opportunity to fully consider the proposals to be discussed. We recognize that this process at times has been imperfect; and that, with more time or additional resources, perhaps we could have enhanced the timing and operation of the project. Nevertheless, the Co-Chairs commend all parties for their good faith efforts to work within the bounds of this expedited process, and believe that the process ultimately has given all participants a fair opportunity to express their views through the reflector, in telephone conferences and in meetings.

2.10 The Co-Chairs wish to express their deep appreciation to the many parties who participated in the BPDG process and who have extended truly extraordinary efforts to support the rapid conclusion of this project. It is indeed noteworthy that so many people invested a great deal of time, resources and energy in these proceedings. The companies and interested parties involved in the BPDG have gained a deeper understanding of the needs that different industries and consumers have in addressing the issue of protecting over-the-air DTV from unauthorized redistribution. The Co-Chairs believe that participants have acted in good faith to understand the issues raised by others, as well as to advance their own perspectives and interests. Despite these efforts, and in part given the constrained deadlines as noted in section 2.9, the BPDG process had certain inherent limitations, and this report necessarily reflects those limits.

2.10.1 First, as its name implies, the BPDG is a discussion group. It is not a standards body or public policy decision-making forum. Individuals, companies, and groups of companies were free to meet separately to form and negotiate proposals and present those to the full BPDG. This may have given the unintended appearance that BPDG was not fully transparent and some parties may have felt "excluded" from particular discussions. Nevertheless, every proposal contained in the Requirements document and described in this report was subject to considered discussion and scrutiny by all BPDG participants in meetings, on teleconferences, and/or on the email reflector scrutiny.

2.10.2 Second, the purpose of the BPDG was not to develop complete consensus. Rather, as noted in Section 2.2 above, it was to evaluate proposed solutions to the stated problem. Where BPDG participants offered substantial support for a proposal, we have so indicated. Where substantial differences remained, they are so noted.

2.10.3 Third, the discussions have been important to advance understanding, but they have not resolved all of the critical technical, enforcement, and policy issues. In particular the list of enforcement and policy issues to be handled by the parallel group is significant and as substantial as the issues addressed herein.

Consequently, the Co-Chairs suggest that the value of this report lies less in reaching particular "conclusions" than in describing the important discussions of the group, and in finding the many points of agreement as well as explaining the substantial points of disagreement.

2.11 In preparing this Report, the Co-Chairs have sought input from all participants, and have received several sets of comments. The Co-Chairs have endeavored to fairly summarize and reasonably reflect all comments in this Report. In doing so, the Co-Chairs have given particular deference to suggested changes concerning participants' characterization of their own

statements. In the interests of brevity, the Co-Chairs have not reflected all comments verbatim, and have tried to avoid making repetitive references to the same or similar points in numerous sections of the Report. Moreover, the Co-Chairs have not endeavored to set forth in detail the comments of certain participants that have opposed the premise on which the BPDG was formed (see section 2.6 above). Because no summary report can thoroughly convey all comments received, all submitted comments are attached hereto at Tab P.

2.12 *Individual Comments of the Consumer Electronics Industry Co-Chair:*

The CE industry supports the concept of a narrowly focused process to protect copyright asserted digital television broadcasts from distribution on the Internet. Although many CE companies support most of the provisions in the final draft Compliance and Robustness Requirements, there is no full consensus within the CE industry supporting this current process. This lack of full consensus is due to the following concerns by a number of CE companies:

2.12.1 Some CE companies are concerned that while the initially understood goal was to protect retransmission of content over the internet, the actual document is less than clear in specifically narrowing this protection to the public network known as the Internet, and that while exclusions have been made for home and personal networks, these limits are not clear.

2.12.2 Some CE companies are concerned that there is no affirmative recognition of the CE industry's historical and unwavering support of "fair use" consumer rights with regard to the personal, non-commercial use of legally obtained content.

2.12.3 Some CE companies are concerned that the process, in recognition of the desired timeline, did not use the normal standards processes (such as dispute resolution, voting, procedural rules, etc) in it's work efforts, and therefore did not benefit from the complete participation of all parties in a structured manner.

2.12.4 Some CE companies are concerned that the process of having technologies "approved" for inclusion to accomplish the protection goal is not objective, and may be used as a competitive weapon or barrier to entry.

2.12.5 Some CE companies are concerned that this process will negatively impact the ability to build DVD recorders for digital television that would be backward compatible with the 30 million or so existing players in consumers homes.

2.12.6 Some CE companies are concerned that this work product contains accommodations and structures that are designed to allow for future protection systems such as watermarking. Because no watermarking proposals for DTV have been discussed, nor the surrounding issues, these companies are uncomfortable in accepting any framework for such systems until all the issues are known.

2.12.7 Some CE companies are concerned that while there appears to be oral agreement among the parties about the use of VSB modulators, it is not yet understood whether the wording in the document accurately reflects such agreement and requires more lengthy review, and that specifically, consumers should be able to send unrestricted content (such as camcorder outputs)



as well as unscreened and properly screened content (such as free over-the-air TV programming) to other devices in their home using VSB modulation.

3. The Work Product of the BPDG

3.1 The BPDG recognized the need for requirements defining how compliant systems should implement the proposal on an architectural level, and how the implementation of such systems could be made robust against consumer hacking. The Work Plan proposed that a small task force be created to begin drafting “strawman” compliance and robustness requirements. Accordingly, during the December 18, 2001, conference call, volunteers were requested for such a task force. In response, a number of participants who had experience in drafting analogous documents for digital protection technologies already in the marketplace volunteered, during the call and subsequently by e-mail to the Co-Chairs, to form a small drafting task force to prepare, for discussion by the BPDG, a draft of such Compliance and Robustness Requirements. Those who volunteered for and participated in this drafting group included representatives from the Computer Industry Group, Fox, Hitachi, Intel, MPAA, Sony, Sony Pictures, Viacom and Warner Brothers.

3.2 On February 15, 2002, this drafting group circulated to the BPDG a first “strawman” draft of the Compliance and Robustness Requirements.

3.3 The Compliance and Robustness Requirements document has been the subject of discussion during 10 meetings and conference calls, and additional comments concerning the document were circulated on the BPDG-tech email reflector. Based upon discussion and comment by the BPDG participants, the Compliance and Robustness Requirements has undergone five complete draft revisions.

3.4 The first three drafts were prepared by the drafting group, reflecting numerous comments received from BPDG participants. The fourth draft was proposed for comment by a group representing companies of the MPAA, 5C and Computer Industry Group. (This fourth draft was part of a proposal that included criteria by which technologies might be approved for protection of digital output transmissions and digital recordings of DTV content. This and another proposal from Philips for such criteria are described below in section 6.)

3.5 The “final” draft of the Compliance and Robustness Requirements document, attached at Tab C, is the primary work product of the BPDG. Although the BPDG has no voting rules or other formal means by which to determine the extent of agreement, it is nevertheless the considered view of the Co-Chairs that the draft reflects substantial agreement among the BPDG participants as to most provisions. A number of significant comments concerning the draft were not resolved by the BPDG participants. These comments are reflected in brackets in the Compliance and Robustness Requirements document, and are explained below in section 5 of this Report.

3.6 The initial draft of the Compliance and Robustness Requirements included, for frame of reference, two alternative proposals for section X.2, each of which described which devices would be required to comply with the Compliance and Robustness Requirements prior to being sold or distributed. The two different proposals for section X.2 were submitted respectively by certain Motion Picture Association of America member company representatives, attached at Tab D, and by representatives of member companies of DTLA and Computer Industry Group, attached at Tab E. The BPDG briefly reviewed these documents for purposes of understanding

the proposed methods of assuring implementation of the proposed Compliance and Robustness Requirements, but it was understood that any proposals for section X.2 would receive further discussion and appropriate consideration by the parallel group.<sup>7</sup>

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<sup>7</sup> Some participants expressed concern that drafting of Compliance and Robustness Requirements could not be meaningfully completed until the parties determined under what circumstances its provisions apply (i.e., until section X.2 was completed and agreed upon).

#### 4. Summary of Conclusions

The discussions to date have yielded substantial agreement among the BPDG participants concerning the use of the ATSC RC descriptor to signal protection for DTV content, and many of the requirements to be imposed upon certain products that handle DTV content that is to be protected.<sup>8</sup> These fundamental points of agreement among the BPDG are set forth in the final draft Compliance and Robustness Requirements, and are summarized below:

4.1 An approach based on a “broadcast flag” is technically sufficient for the purpose of signaling protection of DTV content in digital form, beginning at the point of demodulation, against unauthorized redistribution.<sup>9</sup>

4.2 The specific “Broadcast Flag” to be used for this purpose is the Redistribution Control descriptor set forth in ATSC Standard A/65A: Program and System Information Protocol for Terrestrial Broadcast and Cable, 31 May 2000, Amendment 3, 6 February 2002.

4.3 Protection requirements should begin at the point of demodulation of the incoming 8-VSB, 16-VSB, 64-QAM or 256-QAM (collectively “n-VSB” or “m-QAM”) modulated DTV signal that thereby produces a data stream consistent with ATSC Standard A/53 Annex C<sup>10</sup> (e.g., in demodulation software or a demodulation chip).

4.4 A product covered by the Compliance and Robustness Requirements must handle demodulated content in a protected manner unless/until the product screens for the Broadcast Flag and determines that it is not present.

4.5 Where the demodulated DTV content has been screened and the Broadcast Flag has been determined not to be present, no further requirements or limitations should be imposed upon the handling or recording of such unmarked content.

4.6 Unscreened Content and Marked Content should be recorded by or output from covered products via only the following permitted methods:

- a. Analog outputs and recording methods;
- b. n-VSB and m-QAM modulators (subject to refinement of conditions);

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<sup>8</sup> As noted above in footnote 6, a parallel group has been constituted to address means by which any Compliance and Robustness Requirements applicable to the Broadcast Flag solution could be implemented and enforced. Any points of agreement reflected in this Report, or in draft Compliance and Robustness Requirements, should be understood as being addressed only to anticipated possible governmental action.

<sup>9</sup> While certain participants have suggested consideration of additional technologies, such as a “broadcast watermark,” to perform this particular signaling function in a second phase implementation, there is no current plan for such a second phase as there is not a broadly held view that it is necessary. The suggestions of one company, Digimarc, in this regard are attached at Tab O.

<sup>10</sup> These requirements would need to be supplemented or amended if, in the future, new modulation standards replace those listed.

- c. Unprotected DVI outputs (at limited resolution); and
- d. Digital outputs and recording methods that provide specified levels of protection against unauthorized redistribution.

4.7 The requirements to protect digital recordings should not interfere with the ability of consumers to make secure copies of DTV content marked with the Broadcast Flag, either on personal video recorders (*e.g.*, a hard-disk based device such as TiVo or ReplayTV) or on removable media (*e.g.*, on D-VHS tapes or DVD recordable discs). Similarly, the requirements to protect digital outputs should not interfere with the ability of consumers to send DTV content across secure [home and personal digital networks]<sup>11</sup>, such as a home digital network connecting digital set top boxes, digital recorders, digital servers and digital display devices.<sup>12</sup>

4.8 Unscreened and marked content should be protected when passed in digital compressed form across a user accessible bus within a device.

4.9 General agreement has been reached as to the specific robustness requirements to be implemented by covered products.

4.10 For digital cable distribution of DTV, the requirements can be implemented in cable systems utilizing a “POD” module by one method whereby the DTV content is delivered in encrypted form and passed through the POD module, or by another method whereby the content is delivered in-the-clear and does not pass through the POD module. It was to address the latter method, and thereby provide for protection in homes with cable-ready digital television sets that do not require POD modules, that 64-QAM and 256-QAM modulation were added as modulation schemes to which protection requirements would attach.

4.11 Satellite and cable services can encrypt DTV signal retransmissions, so may not need to implement a Broadcast Flag-based solution. However, the parallel group should discuss any requirements necessary to ensure that such content is protected when retransmitted in encrypted form.

4.12 Both proposals for section X.2 of the Compliance and Robustness Requirements anticipate that an appropriate provision will be crafted so as to exempt the requirements from

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<sup>11</sup> See section 5.1 with respect to the bracketed phrase.

<sup>12</sup> One BPDG participant asked that “unauthorized redistribution” should be agreed not to include any redistribution that would be deemed “fair use” of content that a consumer legitimately acquires. Several BPDG participants observed that although the requirements would not impinge upon the making of time-shift recordings, current content protection technologies inevitably cannot accommodate all instances where redistribution of DTV content (*e.g.*, the retransmission of program clips for educational purposes) might be fair use. Other participants noted that the Broadcast Flag would not prevent consumer copying, that the application of “fair use” depends upon detailed analysis of the concrete facts of a particular case, and that in any event debate or comment on application of fair use principles was outside the scope of the BPDG. Some other participants noted that, although fair use purposes might be met today by digitally recording the analog output from a player or recorder, it was their hope and expectation that future, more sophisticated systems that implement broadcast protection may better accommodate such fair uses.

applying to products that are specifically intended for professional and broadcast use (e.g., equipment used by studios, TV broadcasters, satellite and cable operators).

5. Summary of Points as to which General Agreement was Not Reached

In the course of the discussions of the Compliance and Robustness Requirements, general agreement was not reached on a number of significant points, as to which various participants voiced specific disagreements. The Co-Chairs believe that additional time would not be likely to produce significant further agreement on most of these points. These points include:

5.1 The scope of protection to be accorded to DTV content has been described in the BPDG meetings and documents in various ways, such as, “protection against unauthorized redistribution (including the Internet),” or “unauthorized redistribution outside the home or personal digital network environment,” or outside the “home or other similar local environment,” and so forth<sup>13</sup>. Notwithstanding, all statements of the scope of the BPDG project have included redistribution over the Internet as an example of such protection. Some participants contend that the scope of protection should be limited simply to unauthorized redistribution over the Internet. Others suggest that the parallel group consider a more precise definition of the contours of such protection, so as to clarify that the protection would limit redistribution of DTV to “personal” environments, which they described as including the home, automobile, personal portable devices, and communications between primary and secondary residences.

5.2 The draft Robustness Requirements proposes, consistent with analogous requirements for certain protection technologies already in the marketplace, to set certain levels of robustness according to the type of tools that would be required to circumvent the protection. Some BPDG participants maintain that certain Robustness Requirements should instead be based on a defined level of technical skill, such as that of an ordinary consumer, so that unreasonably stringent requirements (e.g., preventing successful hacks by even the most knowledgeable professional technicians) are not imposed on device manufacturers. The MPAA member companies have maintained that an approach based on a defined level of skill would be inconsistent with the structure of the Robustness Requirements, stating by way of example that the requirements should not permit a professional to defeat protection with a screwdriver.

5.3 The draft Compliance Requirements would permit computer products to continue to deliver protected DTV content through unprotected DVI outputs, at MPEG-2 main profile @ main level video quality. This provision is designed to accommodate legacy computer monitors that receive content only through DVI. Some participants have suggested that this capability also should apply to consumer electronics products, inasmuch as some manufacturers might wish to market devices, such as cable or satellite set-top boxes, that would be capable of delivering DTV to such legacy computer monitors, and inasmuch as they believe it is generally not sound policy to discriminate among the products of the converging CE and IT industries. The MPAA member companies have stated that the provision is narrowly tailored to address a relatively small number of currently existing legacy displays, and have maintained that there is no material

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<sup>13</sup> The phrase “home or other similar local environment” is used specifically in relation to the output of DTV content using a self-certified “Robust Method”, and some participants have requested that it be changed to “home or personal digital network environment” consistent with wording used elsewhere, whereas the MPAA member companies have maintained that “personal digital network” is unduly broad, especially in this context.

benefit to expanding the provision in such a manner, and that there may be substantial harm in doing so.

5.4 The draft Compliance Requirements would permit the use of a self-certified “Robust Method” for outputs only where the DTV content was unaltered Unscreened Content (e.g., Unscreened Content that had not yet been transport stream processed). Some participants have requested such an output be permitted for Marked Content as well, noting concern that without it, the development of innovative content protection systems for home networks, and rapid deployment of same, would be significantly affected. The MPAA member companies have maintained that Marked Content, having been subject to transport stream processing, is particularly susceptible to unauthorized redistribution and should therefore be subject to the more rigorously and clearly identified protections provided by “authorized” protection technologies, citing benefits to both manufacturers and consumers arising from the certainty and resulting increased access to attractive digital broadcast content that would be afforded by this approach.

5.5 The draft Robustness Requirements include the requirement, included in similar content protection technology agreements, that Covered Products “shall be manufactured in a manner clearly designed to effectively frustrate” attempts to modify such Covered Products to defeat the Compliance Requirements. A few participants have proposed that the word “effectively” be deleted, stating that it adds unnecessary ambiguity to the requirement and could be construed in an unintended fashion (e.g., as requiring foolproof design). The MPAA member companies maintain that deleting the word “effectively” would afford an insufficient level of protection, and would be inconsistent with the language and intent of the Robustness Requirements.

5.6 Philips submitted a presentation describing a potential method whereby unencrypted recordings of broadcast content could be protected by an alternative “flag preserving” mechanism. Protection in this scheme, as with the obligation to detect the Broadcast Flag, would derive from “compliance” rather than “self-protection.” Technical and related policy questions and comments for and against the proposal were discussed at length in BPDG meetings and conference calls. Several favored the proposal because it would permit content recorded in unencrypted form on the DVD+RW format (and possibly other backwards-compatible DVD recording formats) to be played on certain legacy DVD players. The MPAA member companies have objected to the proposal, arguing that it would provide inadequate technical security, particularly with respect to legacy devices. There were other objections to the broader scope of legislation that would be necessary for purposes of enforcement (*i.e.*, legislation that would regulate all DVD players, recorders, drives and interfaces). Others observed that this proposal benefited a particular DVD recording format, yet would impose technical and legal mandates upon DVD players and drives of all formats. In response to inquiries at two meetings, the BPDG participants voiced insufficient interest in further pursuing the proposal within the BPDG.

5.7 A proposal was later made by Philips and certain other consumer electronics companies that, for a limited number of years (intended to capture the reasonable life of legacy DVD players), in-the-clear recordings of Unscreened Content and Marked Content could be made using standard definition DVD recorders. This was consistent with assertions by these and some other participants that any technological protections should be applied only to HD content. Motion picture companies opposed such a “grandfather” provision, *inter alia*, because tens of



millions of legacy DVD-ROM drives would remain capable of unauthorized redistribution of such content when played back, including over the Internet.

5.8 A few participants suggested that the method for transmitting DTV content that is received from a trusted source and remodulated using an n-VSB modulator could be included on Table A. Those who supported this suggestion contended that as long as DTV content was freely available over the air, it made no sense to apply a higher degree of protection for DTV content circulating within the home, and that any technology that provided equivalent prevention of redistribution should be accepted for inclusion on Table A. Motion picture companies objected to this proposal on grounds that n-VSB remodulation is not a "protection" technology at all, and it was not appropriate to include on Table A technologies that were not protection technologies. Additionally, it was noted by others that the impact of this proposal would be to permit other non-protection technologies to be listed on Table A, under criteria proposed by companies of the Motion Picture Association of America, DTLA and Computer Industry Group (*see* section 6.6).

5.9 During early BPDG meetings certain participants expressed the view that an approach based on a "broadcast flag" for protecting DTV content must be designed so as to avoid negatively affecting other content protection systems. A specific concern noted was the possibility that such a flag-based system, in conjunction with consumer n-VSB and m-QAM modulators, might be misused to "launder" content taken from other protection systems. For example, motion picture content might be misused by being taken from a DVD-Video disc, converted into a transport stream, and passed through a consumer modulator such that a product compliant with the flag-based requirements would demodulate it and handle it as DTV content. Certain other BPDG participants expressed the view that such concerns related to other content protection systems or to non-DTV content were outside the scope of the BPDG. Pursuant to such concerns, the MPAA member companies proposed during an April BPDG meeting that consumer n-VSB and m-QAM modulators be required to block content that arrived from "non-trusted sources" and contained the Broadcast Flag from being modulated. On May 1, the MPAA member companies posted to the BPDG reflector an outline of such proposal, which described "trusted source" content as including content received via DTCP or other conditional access systems and described "non-trusted sources" as including unprotected analog-to-digital converters and unprotected digital inputs. On May 24 and May 29, Fox and the MPAA member companies, respectively, proposed language for Sections X.3(a)(2) and X.4(a)(2) of the Compliance and Robustness Requirements that would extend their earlier proposal so as to apply obligations on modulators with respect to all content other than Unscreened and Marked Content. A number of BPDG participants, while supporting the inclusion of n-VSB and m-QAM modulated outputs as permitted outputs under Sections X.3(a)(2) and X.4(a)(2), objected to the MPAA proposal that such sections also impose obligations on modulators with respect to content other than Unscreened and Marked Content. The basis for such objections were that (a) any obligations that might be imposed on consumer modulators with respect to non-broadcast content were not appropriate subject matter for Sections X.3(a) and X.4(a) (whose scope is limited to requirements imposed on Covered Products with respect to Unscreened and Marked Content); (b) if any obligations are imposed on modulators, they should not extend beyond the "non-trusted" unprotected analog or unprotected digital content originally proposed by the studios and (c) there had not been sufficient time for analysis and discussion of the proposal.

5.10 In mid-May, pursuant to the same concerns described above in section 5.9, MPAA member companies proposed that the draft Compliance Requirements be modified so as to prevent Unscreened Content from being passed to outputs protected by “authorized” protection technologies, on the basis that Unscreened Content is not known by the device to be DTV content. Because this proposal was made near the scheduled conclusion of the work of the BPDG, and entailed a substantial change to the Compliance Requirements, participants have generally expressed the need for further opportunity to consider and understand its rationale and impact. Nevertheless, a number of participants have commented regarding possible alternatives or modifications to the proposed solution that might be preferable, but others objected to them.

6. Matters Suggested for Referral to the Parallel Group

In the course of the BPDG discussions, several issues arose that related to enforcement and related policy issues. The BPDG therefore recommends that the parallel group should discuss and consider the following issues:

6.1 It is the understanding of the BPDG that the parallel group will consider means of enforcement of broadcast protection requirements, including by legislative or regulatory means. As noted above, two approaches have been proposed in drafts of section X.2, setting forth concepts as to how the Compliance and Robustness Requirements might be implemented and enforced. The BPDG recommends that the parallel group give consideration to these and potentially other proposed approaches for section X.2.

6.2 As noted in paragraph 5.1 above, certain BPDG participants recommend that the parallel group consider language that might better define the scope of limitation upon the unauthorized redistribution of DTV content.

6.3 The proposed definition of “Downstream Product” includes a provision whereby the manufacturer of such product “has committed in writing that such product will comply with the Compliance Requirements and be manufactured in accordance with the Robustness Requirements, such that such product shall be a Covered Product.” The BPDG suggests that the parallel group consider the nature of the requisite written commitment.

6.4 The BPDG recognized that certain cable and satellite systems might retransmit to the home in encrypted form content that initially was broadcast as Unencrypted Digital Terrestrial Broadcast Content. The BPDG recommends that the parallel group should discuss any requirements necessary to ensure that such content is protected when retransmitted in encrypted form.

6.5 Consistent with industry practice, the BPDG acknowledges that some period of time must be given before manufacturers must produce products in compliance with any instrument that implements the Compliance and Robustness Requirements. The BPDG requests the parallel group to consider a reasonable time, taking into account both the goals of promptly implementing broadcast protection, and practical considerations relating to the development and licensing of technical methods that comply with the particular instrument, the design, manufacture and distribution in sufficient quantities of compliant products, and the sale of products manufactured before such instrument took effect.

6.6 The BPDG requests that the parallel group consider proposed criteria that could be used to determine whether a particular technology should be “authorized” as a digital output protection technology or recording method. Three proposals were presented to the BPDG. Two proposals coalesced into a single proposal offered by companies of the Motion Picture Association of America (“MPAA”), DTLA and Computer Industry Group (“CIG”), which was part of an overall proposal that included amendments to the Compliance and Robustness Requirements (the “MPAA, DTLA and CIG” proposal). That proposal is attached to this Report at Tab F. The other proposal for criteria, offered by Philips and supported by several

participants, is attached to this Report at Tab G. The two approaches can be summarized as follows:

6.6.1 The MPAA, DTLA and CIG proposal includes three criteria that are intended to reflect demonstrated marketplace use or approval of the technology by content owners (and, in the case of Criterion Two, by implementer licensees), and one criterion (Criterion Three) by which a proponent may demonstrate that a proposed technology provides protections at least as effective as those offered by any other technology on the list. Several organizations and participants have submitted statements noting that certain of their technologies would qualify under the criteria noted above.

6.6.1.1 DTLA submitted a statement that the DTCP transmission protection technology satisfies at least Criterion Two of the MPAA, DTLA and CIG proposal; and that protection technologies that were approved to protect DTCP-protected content, namely, HDCP for transmission protection and CPRM and D-VHS for recording protection, would therefore qualify under the criteria as authorized technologies. This submission is attached at Tab H. DTLA proposed “Associated Obligations” that define the requirements for implementation of DTCP in conjunction with the BPDG Compliance and Robustness Requirements, which obligations also are included in the attachment to Tab H. At the BPDG meeting on April 29, participants speaking on behalf of Sony Pictures and Warner Bros. confirmed that those companies had entered into licenses to use DTCP and that they believe DTCP and the other three technologies mentioned above satisfy the criteria set forth in the MPAA, DTLA and CIG proposal. Representatives from four other MPAA companies also stated at the April 29 meeting that they believe the four technologies satisfy the criteria and should be included on Table A.

6.6.1.2 Digital Content Protection, LLC submitted a statement that the HDCP technology satisfies at least Criterion Four of the MPAA, DTLA and CIG proposal, and proposed “Associated Obligations” for HDCP, both of which are attached at Tab I.

6.6.1.3 4C Entity, LLC submitted a statement that the CPRM technology satisfies at least Criterion Four of the MPAA, DTLA and CIG proposal, and proposed “Associated Obligations” for CPRM, both of which are attached at Tab J.

6.6.1.4 JVC submitted a statement that the D-VHS technology satisfies at least Criterion Four of the MPAA, DTLA and CIG proposal, and proposed “Associated Obligations” for D-VHS, both of which are attached at Tab K.

6.6.1.5 Microsoft submitted a statement that the Windows DRM satisfies one or more of these criteria. This submission is attached at Tab L. Microsoft provided a description of how its Windows DRM protects content through renewability of compromised security components, enforcement of revocation and other means.

6.6.2 The Philips proposal is set forth as a combination of “objective” technical criteria, and criteria defining specific attributes that would be required of licenses for any proposed

technology (e.g., that licenses should be available for use of a technology only to protect broadcast content).

6.6.2.1 Philips submitted a statement that its OCPS transmission protection technology satisfied both its proposed criteria and one of the MPAA, DTLA and CIG proposed criteria. Philips attached to its submission a technical description of the OCPS technology, a term sheet outlining proposed license terms, and proposed compliance and robustness rules. This submission is attached at Tab M. Philips subsequently proposed “Associated Obligations,” which are also attached at Tab M.

6.6.3 Proponents and opponents of each approach described specific concerns and objections at length in several meetings, and particularly in the meetings on April 3 and April 29. Inasmuch as issues surrounding the appropriateness of each approach, or of particular criteria, implicate policy considerations, the BPDG recommends that this issue be considered further by the parallel group.

6.7 The MPAA, DTLA and CIG proposal suggested that several additional issues be referred to the parallel group:

6.7.1 On the belief that adding to Table A technologies that satisfy the proposed criteria should be as seamless and transparent as possible, the MPAA, DTLA and CIG proposal requested that parallel group undertake the task of creating a straightforward process under Criteria One and Two, whereby a proponent would give notice that one or more of the criteria are satisfied (which notice would, where applicable, specify which companies have used or approved a technology), and an adequate opportunity would be given to each company named in such notice to dispute the claim that the named company used or approved the technology. If no such dispute were forthcoming, the proposed technology would be added to Table A. The process would need to provide a speedy process to resolve any such disputes.

6.7.2 Some determinations of whether a company has “used or approved” a technology may be capable of resolution only through information in the hands of the entity that has used or approved it. Accordingly, the MPAA, DTLA and CIG proposal requests the parallel group to consider a process whereby a company that proposes a technology for addition to Table A may obtain information regarding whether such an entity has used or approved the technology.

6.7.3 When a technology has been “significantly compromised” in relation to its ability to protect Unscreened Content and Marked Content from unauthorized redistribution (including unauthorized Internet redistribution) it may no longer be used as a comparison metric under Criterion Three for technology proposed to be added under this criterion. Accordingly, the MPAA, DTLA and CIG proposal requests the parallel group to consider a process for determining whether such a compromise has occurred.

6.7.4 If a technology has been compromised, and the compromise is substantially higher than “significantly compromised” noted above, the MPAA, DTLA and CIG proposal requests the parallel group to consider a standard for removing a technology from Table A. Such a standard should take into account the protection of Unscreened Content and Marked Content from unauthorized redistribution, as well as the impact on content owners, consumers, and

manufacturers that would result from removal of a technology from the list and the continued use of such compromised technology. The proposal also requests that the parallel group address a process by which (a) requests can be made to remove a technology from Table A on the basis that such standard has been met; (b) interested parties can object to such requests for removal; and (c) a timely determination would be made as to whether or not such technology will be removed from Table A (after a reasonable grace period).

6.8 Computer Industry Group companies have requested that the parallel group consider the establishment of additional or variations of the objective criteria set forth in Criterion Three of the MPAA, DTLA and CIG proposal, and other implementers have requested that additional or variations of the objective criteria be added as separate criteria. Criterion Three already contains tests for a technology which is proposed to be added to Table A without direct content owner “use or approval.” Computer Industry Group companies believe that the parallel group could examine such Criterion in light of the limits of the BPDG goals as stated in the work plan for the BPDG: “to prevent unauthorized redistribution of unencrypted digital over-the-air broadcast content.” Those companies believe that some of the criteria could be altered or additional criteria substituted that would permit a technology to be added to the list consistent with those goals and consonant with the Compliance and Robustness Requirements. Those companies were concerned that comparing license terms relating to security (*i.e.*, output and recording controls), enforcement and Change Management might not be objective. Those companies believe that (a) it should not be difficult, in the context of protecting over-the-air digital television, to create alternatives or variations of those criteria that both are objective and are consistent with the robustness and compliance provisions of the Compliance and Robustness Requirements and (b) it is critical that the requirements be objective and readily understood by a manufacturer proposing a technology to be added to the list.

6.9 A number of participants including Computer Industry Group companies requested that the parallel group determine that the Compliance and Robustness Requirements not go into effect until a minimum number of technologies have been included in Table A. (The MPAA, DTLA and CIG proposal does not require this.) Those participants view this as an important precondition to compliance obligations for two reasons: (a) since compliance will be a new government mandate, there should be a reasonable number of technologies to select from in order to ensure that no manufacturer is forced to adopt one of a small number of alternatives; (b) Criterion Three of the MPAA, DTLA and CIG proposal only functions adequately if there are a sufficient number of technologies to compare a technology proposed to be included on the list.

6.10 Similarly, some companies have requested that no technologies be placed on Table A (as “recommended,” “approved” or otherwise) until the criteria for Table A have been finalized. The Co-Chairs note that the Table A document attached at Tab C summarizes proposals made by each of various technology companies and the statements made in support of or in contradiction to such proposals.

[END]