

STAMP AND RETURN

December 19, 2002

The Honorable Michael K. Powell
Chairman
Federal Communications Commission
445 12th Street, SW
Room 8-B201
Washington, D.C. 20554

RECEIVED

DEC 19 2002

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

**Re: Consensus Cable MSO-Consumer Electronics Industry Agreement on
"Plug & Play" Cable Compatibility and Related Issues.**

Dear Chairman Powell:

We are pleased to report to you today that major cable and consumer electronics companies have reached agreement on a package of joint recommendations to the Commission and agreements on critical technical, legal, and industry issues, to assure and expedite the deployment of a national "plug and play" digital television (DTV) cable standard. When implemented, this agreement will provide the certainty the cable and CE industries need to build products and develop services to spur the digital transition, while preserving the ability of both industries to create innovative products and services on a timely basis in the rapidly-changing digital environment. The parties' agreements are reflected in the attached Memorandum of Understanding.

Assuming implementation of this package, consumers will have the ability to access scrambled digital cable television channels (as well as unscrambled digital and analog channels) through future digital cable-compatible DTV and HDTV receivers on a nationally portable basis, without the use of a cable set-top box. Our agreement also calls for a phase-in schedule for digital connectors on DTV receivers to assure secure connectivity to advanced interactive set-top boxes.

We have also committed to continue working together, expeditiously, toward development of a similar package providing for future product compatibility with "advanced interactive" digital cable services, and we intend to hold our first meeting on these issues in January 2003. Those agreements will enable support for "plug and play" consumer electronics products, including DTV and HDTV receivers, with additional, interactive features and services such as access to the cable operator's enhanced electronic program guide, video-on-demand and "impulse" pay-per-view services, also without need of a cable set-top box.

"Plug and play" is the short-hand term applied to "integrated" DTV products such as DTV sets with cable set-top functionality included in the set. In recent remarks you described this as one of the remaining challenges to the successful migration from analog to digital television -- the DTV transition. You have observed that the "basic technical standards are now largely complete" for such integrated DTV products, and noted that the "cable and CE industries are working to resolve remaining business issues, and they are making significant progress." Our

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agreement, embracing a range of regulatory recommendations and private sector technical, licensing, and customer support regimes, should put us on a clear path and schedule to meeting this challenge.

With the encouragement of Commission officials such as yourself, the other Commissioners, Media Bureau Chief Ferree, DTV Task Force Chair Chessen and other Commission staff, as well as Congressional leaders such as Chairman Tauzin, Chairman Upton and Ranking Members Dingell and Markey and their staffs and Senators McCain and Hollings, senior executives of cable multiple system operators ("MSOs") and consumer electronics ("CE") manufacturers have engaged in five months of extensive negotiations to resolve questions and concerns regarding the interoperability of cable systems and consumer electronics equipment, particularly (but not exclusively) DTV receivers with integrated set-top functionality.

You have described some of the key issues that needed resolution as "business" issues. We share your belief that voluntary inter-industry commercial agreements are generally preferable to government regulation. Therefore, our voluntary, private sector agreements about standards, testing, interoperability, and consumer support are at the core of our "package." These agreements, however, assume and depend upon implementation by the Commission of certain regulations that we recommend. Accordingly, we have drafted and enclosed a set of documents that include draft regulations. Clearly these are in the Commission's purview. However, we consider the joint agreements embodied in these recommendations for regulations to be essential elements of the mutual understandings we have achieved.

The enclosed documents include jointly recommended draft regulations. The regulations would provide that cable operators, in digital cable systems of 750 MHz or greater activated channel capacity, shall provision their systems to support the "plug and play" operation of "Unidirectional Digital Cable Products." Cable operators must support devices with the POD-Host Interface built to SCTE standards, supply compatible separate security "POD" modules to customers, and upon their request, HD set-top boxes with IEEE 1394 digital connectors. The proposed regulations also provide that products, including DTV receivers, that are labeled or marketed as able to connect directly to digital cable systems shall meet certain criteria. In particular, those HDTVs that bear the specified labels, or are otherwise marketed as "cable ready," "cable compatible," or as accepting a POD, or otherwise convey the impression that the device is fully compatible with digital cable service, must include "DVI/HDCP" or "HDMI/HDCP" secure digital connectors on a phased-in basis. The labeling/marketing regime would also ensure that manufacturers will self-certify their products under a test suite to be developed jointly by manufacturers and cable operators, which will include tests specifically aimed to prevent harm to the cable network. As part of the self-certification process, a manufacturer's first digital television product will be submitted for interoperability testing. A manufacturer's first non-television product will be submitted for testing with regard to harm to the network unless such manufacturer has previously completed testing for a digital television product.

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Also enclosed is a joint regulatory recommendation related to copy protection issues, including “encoding rules.” This recommendation provides for “encoding rules” modeled generally on those of Section 1201(k) of the Digital Millennium Copyright Act of 1998 (“DMCA”) and the existing license for “DTCP” technology, including provisions for new business models, and that would apply to content delivered by all Multichannel Video Program Distributors (“MVPDs”), including cable. The rules include a ban on the use of “selectable output control” technology by all MVPDs, and the parties’ agreement is contingent on FCC adoption of such rules. With the exception of unencrypted broadcast television, the proposed rules do not address down-resolution of programming. However, the lack of such a provision should not be construed as an indication that down-resolution should or should not be permitted, but rather that the Commission should resolve this issue.

We are also attaching, for informational purposes only, a patent license for the “DFAST” patent technology that ensures secure receipt of certain programming scrambled by local cable operators. Use of this technology in the “PODs” provided by the operators, and in the DTV receivers and other products made by consumer electronics manufacturers, is a key to “plug and play” compatibility on a nationally portable basis. The DFAST license is contingent upon implementation by the FCC of the attached regulatory recommendations, and the undertakings of the parties as described in the enclosed Memorandum of Understanding. We are not seeking any FCC action on the terms of this license.


This agreement is a comprehensive package, reflecting compromises by all of the parties, with the goal of each industry being to provide the American consumer with innovative and valuable digital products and services. As a result, our mutual support for this agreement rests on the recognition that all elements of it are essential. Our proposed regulations address a number of essential technical issues, and are complemented by our commitments with respect to testing, interoperability, the DFAST technology license agreement, labeling, and customer support. Therefore our mutual, private sector undertakings, described in the attached Memorandum of Understanding, are contingent on the adoption of FCC rules as described above.

Mr. Chairman, we applaud the leadership that you, the other Commissioners, and Congressional leaders have shown in guiding the many industries with a stake in the digital transition along a path to, as you put it, “bring the transition home.” You have said that “pieces of the puzzle are starting to come together.” We hope the agreement we present to you today will provide a critical piece for that puzzle and will hasten the day when all consumers can enjoy the benefits of the digital television world.

Sincerely,


The Honorable Michael K. Powell
December 19, 2002

Charter Communications, Inc.

By: 

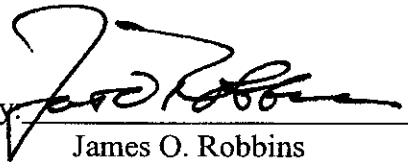
Carl E. Vogel
President and CEO

Comcast Cable Communications, Inc.

By: 

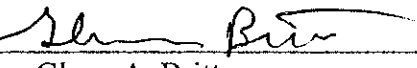
Stephen B. Burke
President

Cox Communications, Inc.

By: 

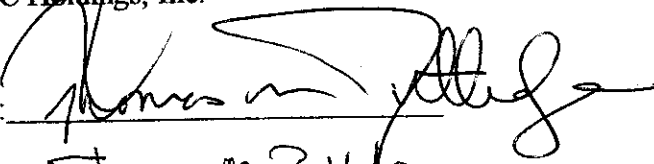
James O. Robbins
President and CEO

Time Warner Cable

By: 

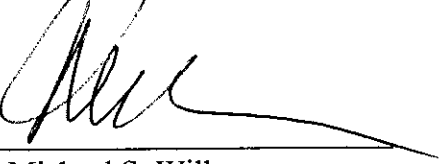
Glenn A. Britt
Chairman and CEO

CSC Holdings, Inc.

By: 

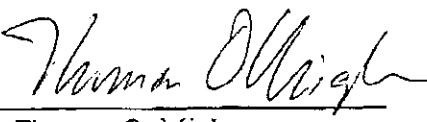
Thomas M. Rutledge
President

Insight Communications Company, L.P.

By: 

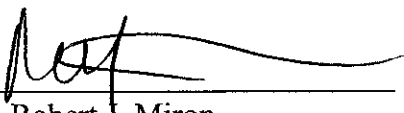
Michael S. Willner
Vice Chairman and CEO

Cable One, Inc.

By: 

Thomas O. Might
President and CEO

Advance/Newhouse Communications

By: 

Robert J. Miron
Chairman and CEO

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Hitachi America, Ltd.



By: _____
Name: Shigetaka Hikosaka
Title: Vice President and Deputy
General Manager

JVC Americas Corp.



By: _____
Name: Shigeharu Tsuchitani
Title: Chairman, President, C.E.O.

Mitsubishi Digital Electronics America, Inc.



By: _____
Name: Robert A. Perry
Title: Vice-President, Marketing

Matsushita Electric Corp. of America
(Panasonic)



By: _____
Name: Paul F. Liao
Title: Chief Technology Officer

Philips Consumer Electronics North America,
a division of Philips Electronics North America
Corporation



By: _____
Name: Thomas M. Hafner
Title: Vice President and General Counsel

Pioneer North America, Inc.



By: _____
Name: Yuichiro Takayanagi
Title: Senior Vice President -
Business Relations &
Intellectual Property

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Runco International, Inc.



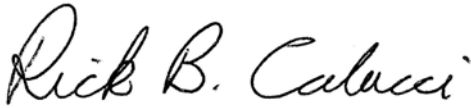
By: _____
Name: Sam Runco
Title: CEO

Samsung Electronics Corporation



By: _____
Name: Frank Romeo
Title: Director, DTV Business
Development

Sharp Electronics Corporation



By: _____
Name: Rick B. Calacci
Title: Senior Vice President & Group
General Manager, Consumer
Electronics Group

Sony Electronics Inc.



By: _____
Name: Frank M. Leshner
Title: Executive Vice President,
Law, External Affairs
and Intellectual Property

Thomson



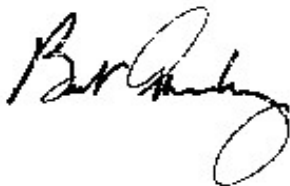
By: _____
Name: Dave Arland
Title: Director, Worldwide Public &
Trade Relations, Consumer Products

Toshiba America Consumer Electronics,
Inc.



By: _____
Name: Toru Uchiike
Title: President & C.E.O.

Yamaha Electronics Corporation, USA



By: _____
Name: Bart Greenberg
Title: National Sales Manager –
Video Products

Zenith Electronics Corporation



By: _____
Name: John I. Taylor
Title: Corporate Vice President

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cc: Commissioner Kathleen Q. Abernathy
Commissioner Michael J. Copps
Commissioner Kevin J. Martin
Commissioner Jonathan S. Adelstein
Susan Eid, Legal Advisor to Chairman Powell
Stacy Robinson, Legal Advisor to Commissioner Abernathy
Alexis Johns, Legal Advisor to Commissioner Copps
Catherine Bohigian, Legal Advisor to Commissioner Martin
Sarah Whitesell, Legal Advisor to Commissioner Adelstein
W. Kenneth Ferree, Chief, Media Bureau
Rick Chessen, Associate Bureau Chief, Media Bureau
Thomas Horan, Legal Advisor to Chief, Media Bureau
William Johnson, Deputy Chief, Media Bureau
Deborah Klein, Chief of Staff, Media Bureau
Mary Beth Murphy, Division Chief, Policy Division, Media Bureau
Steve Broeckhart, Deputy Chief, Policy Division, Media Bureau
John Wong, Division Chief, Engineering Division, Media Bureau
Michael Lance, Deputy Chief, Engineering Division, Media Bureau
Robert Pepper, Chief, Office of Plans and Policy
Amy Nathan, Senior Legal Counsel, Office of Plans and Policy
Jonathan Levy, Deputy Chief Economist, Office of Plans and Policy
Bruce Franca, Deputy Chief, Office of Engineering and Technology
Susan Mort, Attorney Advisor, Media Bureau
Marlene H. Dortch, Secretary (for inclusion in CS Docket No. 97-80 and PP Docket No. 00-67)
Hon. W.J. "Billy" Tauzin
Hon. Fred Upton
Hon. John D. Dingell
Hon. Edward J. Markey
Hon. John McCain
Hon. Ernest F. Hollings

Attachments:

Memorandum of Understanding
DFAST Technology License Agreement
Recommended Regulations to Ensure Compatibility
Recommended Regulations, Encoding Rules
February 2000 NCTA/CEA PSIP Agreement

December 12, 2002

**Memorandum of Understanding Among Cable MSOs and Consumer Electronics
Manufacturers**

This Memorandum of Understanding sets forth the basic principles which are incorporated into final documentation for private sector undertakings, for submission to the FCC including recommendations to be used in a rulemaking process and, as necessary, for submission to Congress for appropriate implementation.

1. Executive Summary:

- 1.1. As the result of a series of meetings among the Parties (Cable Multiple System Operators (“MSOs”), Consumer Electronics Manufacturers (“CE Manufacturers”) and the Consumer Electronics Association (“CEA”)), facilitated by the National Cable & Telecommunications Association (“NCTA”) and CEA, this Memorandum of Understanding (“MOU”) has been reached which summarizes the framework for the set of documents to be submitted to the FCC including recommendations to be implemented as regulations and, as necessary, to Congress for appropriate implementation. Some of the elements of this understanding are private sector undertakings.
- 1.2. No conditions or obligations will be placed on the Parties except for those which are explicitly called for in this MOU.
- 1.3. This MOU constitutes a system that necessarily relies on all its parts to provide consumers with solutions to cable and CE issues affecting digital television. Should any part of this MOU not be implemented as proposed, or if additional obligations are imposed on a Party, each of the Parties reserves its right to withdraw support for any implementation.
- 1.4. This MOU primarily addresses -- and the final agreed-upon documentation primarily addresses -- “Unidirectional Digital Cable Products,” i.e., unidirectional (“one-way”) DTV products, although further discussions will be held to address “Advanced Interactive Digital Cable Products,” i.e., interactive, “two-way,” DTV products. These Unidirectional Digital Cable Products may be televisions, set-top-boxes, recording devices, and other devices without limitation.
- 1.5. The Parties agree to jointly submit and support consensus proposals arising out of this MOU for implementation by FCC regulations and, as necessary, for implementation by Congress through legislation. The Parties will endeavor vigorously to obtain the support (or non-opposition) of associations and other groups for this MOU. The Parties agree that other provisions of this MOU may be implemented by them without either FCC or Congressional involvement.
- 1.6. This MOU does not restrict or preclude private agreements between or among any of the Parties.

2. DFAST TECHNOLOGY LICENSE AGREEMENT

- 2.1. The DFAST Technology License Agreement For Unidirectional Digital Cable Products (which is enclosed as part of this package) (hereinafter the “DFAST License Agreement”) provides a license to use the DFAST scrambling technology for the POD-Host Interface. It is a standard commercial IP license for the DFAST technology for use in Unidirectional Digital Cable Products. It includes compliance and robustness rules that do not impose on a licensee any requirement, either directly or indirectly, other than those that are necessary to protect the security of the POD interface, prevent theft of service, avoid harm to the cable network and provide agreed content protection consistent with the encoding rules proposed for adoption by the FCC. Individual CE Manufacturers may negotiate other licensing terms for such technology (such as in CableLabs’ PHILA) with CableLabs. The DFAST License Agreement authorizes the revocation of the POD authorization for products which do not adhere to the requirements specified in the license. The DFAST License Agreement includes a most favored nation clause under which CableLabs shall make available to licensees any license terms offered as to DFAST technology made available to any or all manufacturers of Unidirectional Digital Cable Products pursuant to the DFAST License Agreement.
- 2.2. The Parties agree to publicly advocate the elimination of any MVPD device obligation to respond to commands as to selectable output controls and the observance of the same encoding rules as called for herein in all digital delivery systems, including Satellite and Internet systems. The DFAST License Agreement does not impose obligations to respond to selectable output control or down-resolution commands in the operation or implementation of the POD technology in the licensed devices. The compliance obligations under the DFAST License Agreement shall be subject to the mutually supported encoding rules submitted to the FCC for implementation. This section also contemplates that the FCC will enact a prohibition eliminating selectable output control for all MVPDs. In the interests of reaching agreement, and recognizing that public policy changes to enact encoding rules and to eliminate selectable output control for digital delivery systems other than MVPDs may take an extended period of time, the Parties agree that this MOU is contingent on the enactment of encoding rules and elimination of selectable output controls for MVPDs only.
- 2.3. The Parties have jointly developed proposed consensus encoding rules that are (1) based upon and generally consistent with the principles and policies of Section 1201k of the Digital Millennium Copyright Act of 1998 and the DTCP/5C license; and that (2) contain a process providing for the launch of new business models, subject to review by the FCC. These encoding rules are included with this package for prospective implementation by the FCC. The Parties have agreed that, while rules for encoding content that are substantially similar to those embodied in the 5C Agreement are acceptable to them for current business models, the consensus encoding rules that the Parties will ask the FCC to adopt need to include a process that is different from the 5C process for addressing new and as-yet-undefined business models and for changing the encoding rules for new services within defined business models. As a result, a new

change method, and evaluation criteria for updating encoding rules, are described in the encoding rules proposal to the FCC that is part of this package.

- 2.4. The Parties are jointly submitting and supporting a proposal for consensus encoding rules (which is enclosed as part of this package) for implementation by FCC regulations and are jointly submitting and will support a proposal for consensus encoding rules, as necessary, for implementation by Congress through legislation, as detailed in Section 2.3.
- 2.5. The DFAST License Agreement contains provisions allowing for liability for the willful and bad faith failure to follow the compliance and robustness rules, however such liability will be limited to avoid “windfall” “piling on” legal actions, and maximum liability amounts are stated, and reasonable. An additional provision includes mechanisms to limit legal costs and attorneys’ fees.
- 2.6. The DFAST License Agreement is to be royalty free, and will require a one-time license fee not to exceed \$5,000 for administration costs.
- 2.7. The DFAST License Agreement does not restrict application of the POD Host Interface and technology to any product that meets its requirements. MSOs will not withhold or otherwise limit the availability of PODs to cable customers for any Unidirectional Digital Cable Product that meets the requirements of the DFAST License Agreement, with the exception that a POD technology may sunset as provided for in this MOU. CE Manufacturers, through confidential reports provided to and consolidated by CEA, agree to provide CEA with confidential production forecasts that will be aggregated by CEA and thereafter used by CableLabs to inform MSOs in advance of the number of POD enabled products entering the marketplace. CableLabs will provide the aggregate unit volume reports from CEA to MSOs for their planning. MSOs and CableLabs agree to keep this information confidential at all times. CE Manufacturers agree to provide such monthly forecasts for a rolling five-month period for five years from the month of self-certification of the first compliant product. This information will be provided so that MSOs can anticipate potential POD demand.
- 2.8. The DFAST License Agreement does not include within the License any requirement for testing or certification of compliance. The Parties have agreed to provisions for interoperability testing and certification which are addressed in Section 3.7 of this MOU.
- 2.9. The DFAST License Agreement contains a field-of-use restriction barring its implementation on Advanced Interactive (two-way) Digital Cable Products. This field-of-use restriction will remain in effect until December 31, 2005, and thereafter unless appropriate regulations and legislation are then in effect that subject all MVPDs (including DBS), telephone and DSL providers, Internet and other competing technologies for the distribution of video to the same encoding rules (including rules applicable to the use of selectable output controls and down-resolution). It is further agreed that should a CE Manufacturer reach a separate DFAST License Agreement which eliminates this field-of-use restriction, such agreement will be open to any CE Manufacturer under the “Most Favored Nations” (MFN) clause, and any changes in such an agreement will also flow to CE Manufacturers who desire it under the same MFN

clause. If the Parties are unable to reach agreement on requirements for Advanced Interactive (two-way) Digital Cable Products by December 31, 2005, then any Party may pursue independent solutions from the FCC and Congress.

3. Unidirectional Digital Cable n ($n = \text{TV, Tuner, etc}$) Product Definition (This is a one-way cable product)

- 3.1. The Parties will agree upon a recognized proposed primary term for the products addressed in this MOU. The Parties agree that application of this term to the product, packaging and related materials is voluntary, but the Parties are encouraged to use this name to promote consumer awareness.
- 3.2. The Parties will agree upon a recognized proposed supplementary term for the products defined below, which are additionally equipped with a secure digital interface (as specified in Section 3.6 below). The Parties agree that application of this term to the product, packaging and related materials is voluntary, but the Parties are encouraged to use this name to promote consumer awareness. When used, this term should be used in context with the primary term to avoid consumer confusion.
- 3.3. The Parties agree to not trademark either of the above terms, thus agreeing to not exercise any control over their application and use, or may agree to jointly trademark these terms without compensation and therefore ensure via license terms that these terms are only used to describe products defined herein. Should any Party already own a trademark or other legal right to the above terms, it agrees to drop all claims to such rights, provided that such Party consents to have the term in which it owns a trademark or other legal right used as the aforementioned term.
- 3.4. Cable Services Accessed (Minimum):
 - 3.4.1. Analog and Digital Services in-the-clear (including basic and tiered cable services)
 - 3.4.2. Scrambled digital services via POD CA system (including basic, tiered and premium cable services)
 - 3.4.3. Call-ahead pay-per-view (PPV) if supported by cable operator.
 - 3.4.4. Channel Navigation using channel map and associated text label from cable network.
 - 3.4.5. These products do not access video-on demand (VOD)
 - 3.4.6. These products do not access impulse pay-per-view (IPPV).
 - 3.4.7. These products do not utilize the return path of the cable system.
 - 3.4.8. These products do not use MSO provisioned EPG program schedule information from the cable network. In this respect, MSO provisioned EPG program schedule information does not include PSIP data provided under the terms of the February 2000 NCTA/CEA PSIP agreement.
 - 3.4.9. These products can receive PSIP data in-band pursuant to the terms of the February 2000 PSIP agreement.
 - 3.4.10. Certain products (described in Section 3.6 below) will provide for an interface for connection to future advanced cable set-top-boxes and other products.

3.5. Summary Technical Description

- 3.5.1. Tune the NTSC analog channels that are transmitted in-the-clear.
- 3.5.2. Tune digital channels that are transmitted in compliance with SCTE 40 2001 as amended by DVS/535 (as of 10/29/02), including both in-the-clear channels and channels that are subject to conditional access.
- 3.5.3. May navigate channels based upon (a) channel information (virtual channel map and source names) provided through the cable system in compliance with ANSI/SCTE 65 2002 (as of 10/29/02) (this is limited to channel numbers and associated text labels) and/or (b) PSIP-enabled navigation (SCTE 54 2002 as amended by DVS/435r4) (as of 10/29/02).
- 3.5.4. Include the POD-Host Interface, specified in SCTE 28 2001 (as of 10/29/02) as amended by DVS/519r2 (as of 11/05/02) and SCTE 41 2001 as amended by DVS/301r4 (as of 10/29/02) or implementation of a more advanced POD-Host Interface based on successor standards. The use of a successor POD is optional (except that a POD subject to sunset as provided herein cannot be employed), but when available its use is encouraged. The Parties will cooperate in having the POD specifications approved by an ANSI-accredited standards setting organization.
- 3.5.5. Responds to Emergency Alerts that are transmitted in compliance with ANSI/SCTE 54 2002, as amended by DVS/435r4 (as of 10/29/02).

3.6. Digital and 480p Interfaces (DVI and HDMI, both of which include HDCP, are considered interchangeable at the CE Manufacturer's option):

- 3.6.1. The Parties have committed to recommending to the FCC a labeling regime as to interfaces that anticipates deployment of DVI or 480p Y,Pb,Pr interfaces. CE Manufacturers and CEA are supportive of this recommended labeling regime and of the expectations of MSOs with respect to delivering services and features, through these interfaces, to consumers as a result of the recommended package, including these regulations. Under the recommended labeling regime, CE Manufacturers shall be required to employ DVI or 480P Y,Pb,Pr interfaces (as a minimum) as follows on Unidirectional Digital Cable Televisions (not other Unidirectional Digital Cable products):
 - 480i grade televisions – none.
 - 480p grade televisions – as follows (either DVI or HDMI with HDCP, or 480P Y,Pb,Pr interfaces – CE Manufacturer's choice):
 - With screen sizes 36 inches and above -- 50% of a manufacturer's models offered for sale effective July 1, 2004; 100% of such models effective July 1, 2005.
 - With screen sizes 32 to 35 inches -- 50% of a manufacturer's models offered for sale effective July 1, 2005; 100% of such models effective July 1, 2006.
 - 720p/1080i (HD) grade televisions – as follows (either DVI or HDMI interfaces with HDCP – CE Manufacturer's choice):
 - With screen sizes 36 inches and above -- 50% of a manufacturer's models offered for sale effective July 1, 2004; 100% of such models effective July 1, 2005.

- With screen sizes 25 to 35 inches -- 50% of a manufacturer's models offered for sale effective July 1, 2005; 100% of such models effective July 1, 2006.
- With screen sizes 13 to 24 inches – 100% of a manufacturer's models offered for sale effective July 1, 2007.
- As to the above, screen sizes are to be measured diagonally across the picture viewing area. These screen sizes are stated in the dimensions applied to screen sizes with a traditional 4:3 aspect ratio. When applied to different aspect ratios, the applicable screen size is determined by the vertical measurement. For example, the requirements for a 13" screen size with a 4:3 aspect ratio apply to a DTV receiver with a 7.8" vertical measurement and a 16:9 aspect ratio.

3.6.2 MSO Commitments:

- 3.6.2.1 Under the recommended FCC regulations, the following will apply to MSOs. Effective July 1, 2005, when provisioning HD set-top-boxes (STB), MSOs must include both DVI/HDMI with copy protection and IEEE 1394 with copy protection (including software support) as described in Section 3.8. Effective December 31, 2003, upon request of a customer, MSOs will replace any leased high definition set-top box, which does not include a functional IEEE 1394 interface, with one that includes a functional IEEE 1394 interface or upgrade the customer's set-top box by download or other means to ensure that the IEEE 1394 interface is functional. If the consumer has a HD STB with DVI, but not 1394, and does not want a box with a 1394 interface, the customer may retain his current STB. MSOs need not exchange a deployed STB unless the consumer wants one with a 1394 interface. MSOs will replace any deployed HD STB with a DVI connector with one with DVI and 1394.
- 3.6.2.2 With regard to the replacement of a deployed HD STB with DVI for one with DVI and 1394, the STB will be provided at no additional cost to customer if customer requests it. The MSO may charge, as appropriate, for delivery and installation of the new STB.
- 3.6.3 To allow for future flexibility, subject to joint approval of the Parties (and the FCC if, as proposed, the CE Manufacturers' obligation to include digital interfaces is embodied in regulation or legislation), future secure digital interfaces may be substituted for those detailed above.
- 3.6.4 CE Manufacturers shall provide in appropriate post-sale material that describes the features and functionality of the product, such as the owner's guide, the following language: "This digital television is capable of receiving basic analog, digital basic and digital premium cable television programming by direct connection to a cable system providing such programming. A security card provided by your cable operator is required to view encrypted digital programming. Certain advanced interactive digital cable services such as video-on-demand, cable operator enhanced program guide, and data enhanced television service may require the use of a set top

box. For more information contact your local cable operator.” This notification information is to be made available in various product owner’s guides and technical references. It is specifically agreed that CE Manufacturers need not provide retail or pre-sales consumer notification information and that such notification information need only be consumer post-sales in nature. CE Manufacturers will agree to an owner’s guide index reference to “Digital Cable Compatibility,” leading the consumer to the information in the owner’s guide or technical reference material.

3.7. Interoperability Testing and Certification Requirements:

The Parties will jointly develop and mutually agree to a Test Suite for Unidirectional Digital Cable Product prototype testing by January 31, 2003.

Each CE Manufacturer will bring a prototype of its first POD-enabled Unidirectional Digital Cable Television to CableLabs or to an appropriately qualified third-party test facility to execute the Test Suite. CE Manufacturers shall remedy all Critical Test failures and retest at CableLabs or an appropriately qualified third-party test facility. CE Manufacturers may independently determine how to remedy Non-critical Test failures and may remedy them without retesting of the product at CableLabs or an appropriately qualified third-party test facility. CE Manufacturers shall submit First Prototype Test Suite Results and Self-Certification Documentation to CableLabs. For POD-enabled Unidirectional Digital Cable Televisions developed after the first model, CE Manufacturers will submit Self-Certification Documentation to CableLabs.

If the CE Manufacturer’s first model is not a Television, the CE Manufacturer will bring a prototype of said model to CableLabs or an appropriately qualified third-party test facility to execute the Test Suite. CE Manufacturers shall remedy all Harm Prevention Test failures and retest at CableLabs or an appropriately qualified third-party test facility. CE Manufacturers may independently determine how to remedy all other test failures and may remedy them without retesting of the product at CableLabs or an appropriately qualified third-party test facility. CE Manufacturers shall submit Harm Prevention Test Results and Self-Certification Documentation to CableLabs.

After delivering Self-Certification Documentation and First Prototype Test Suite Results for a first prototype Unidirectional Digital Cable Television, CE Manufacturers have no further obligation to test at CableLabs or third-party test facilities. It is envisioned that manufacturers will be issued POD technology secrets in bulk under logistics to be determined by the Parties, for both pre-production testing and mass production, and can begin applying these secrets to POD-enabled televisions upon issuance of the Self-Certification Documentation. The requirements for interoperability and self-certification have been developed and are part of the technical regulations recommended for FCC adoption. CE Manufacturers agree that all Unidirectional Digital Cable Products shall meet the interoperability and self-certification requirements set forth in such technical regulations (which are enclosed as part of this package), or CE Manufacturers will lose their right to receive keys for the non-compliant product. CE Manufacturers will, upon reasonable request and subject to a mutually agreeable non-disclosure agreement, provide summary reporting to CableLabs of the identification of Host IDs and secrets with particular POD unit assemblies and such additional information as will reasonably

allow CableLabs and Cable Operators (through CableLabs), based upon the Host ID of a Unidirectional Digital Cable device, to identify other similar devices by model or production lot reporting. CE Manufacturers will cooperate with CableLabs in defining and using numbering systems that will permit such ready identification. It is acknowledged that such reporting need not be so detailed as to show the application of a specific secret to a specific serial numbered product.

3.8. Obligations of MSOs (as specified in the recommended FCC regulations which are enclosed as part of this package):

- 3.8.1. MSOs will provision all digital cable systems in accordance with the requirements of this section in order to support Unidirectional Digital Cable Products, as follows. The requirements described below are embodied in proposed rules (which are enclosed as part of this package) that the Parties are submitting to the FCC for implementation.
- 3.8.2. No later than July 1, 2004, cable operators shall support Unidirectional Digital Cable Products through the provisioning of PODs and services, as follows
 - 3.8.2.1. Digital cable systems with an activated channel capacity of 750 MHz or greater shall comply with:
 - 3.8.2.1.1. SCTE 40 2001, as amended by DVS/535 (as of 10/29/02), provided however that with respect to Table B.11, the Phase Noise requirement shall be -86 dB/Hz, and also provided that the “transit delay for the most distant customer” requirement in Table B.3 is not mandatory.
 - 3.8.2.1.2. ANSI/SCTE 65 2002 (as of 10/29/02), provided however that the referenced Source Name Subtable shall be provided for Profiles 1, 2, and 3.
 - 3.8.2.1.3. ANSI/SCTE 54 2002, as amended by DVS/435r4 (as of 10/29/02).
 - 3.8.2.1.4. Without limiting the above requirements, cable operators shall also implement the terms of the Feb. 2000 NCTA/CEA PSIP agreement (which is enclosed as part of this package).
 - 3.8.2.2. All digital cable systems shall comply with:
 - 3.8.2.2.1. ANSI/SCTE 28 2001, as revised by DVS/519r2 (as of 11/05/02).
 - 3.8.2.2.2. ANSI/SCTE 41 2001, as amended by DVS/301r4 (as of 10/29/02).
- 3.8.3. MSOs shall:
 - 3.8.3.1. Effective December 31, 2003, upon request of a customer, replace any leased high definition set-top box, which does not include a functional IEEE 1394 interface, with one that includes a functional IEEE 1394 interface or upgrade the customer’s set-top box by download or other means to ensure that the IEEE 1394 interface is functional.
 - 3.8.3.2. Effective July 1, 2005, include both a DVI or HDMI interface and an IEEE 1394 interface on all high-definition set-top boxes acquired by a cable operator for distribution to customers.
 - 3.8.3.3. Ensure that these cable operator-provided High Definition Set-top boxes shall comply with ANSI/SCTE 26 2001 (as of 10/29/02) with transmission of bit-mapped graphics (EIA-799) optional, and shall support the CEA-931-A PASS THROUGH control commands: tune function, mute function, and restore volume function. In addition these boxes shall support the POWER control commands (power on, power off, and status inquiry) defined in A/VC

Digital Interface Command Set General Specification Version 4.0 (as referenced in ANSI/SCTE 26 2001).

- 3.8.3.4. After July 1, 2004, provide PODs to consumers coincident to CE Manufacturers product roll-outs, in sufficient quantity and convenience to ensure access for consumers. PODs that are more advanced than the ANSI standard may be provided as long as these PODs do not impact services and features available from existing PODs and are fully interoperable.

3.9 Additional MSO commitments:

- 3.9.1 MSOs will offer to educate local retailers regarding the capability of the local cable system to support Unidirectional Digital Cable Products.
 - 3.9.2 MSOs will offer to provide a digital set-top box to the consumer if the Unidirectional Digital Cable Product does not work because the local cable system does not support Unidirectional Digital Cable Products.
 - 3.9.3 MSOs will update Go2Broadband and develop a means for both CEA and CE Manufacturers to get access to Go2Broadband to identify systems that support Unidirectional Digital Cable Products in the manner provided by Section 3.8.2.1.
 - 3.9.4 MSOs will provide CE Manufacturers with head-end configuration information and hardware profiles used in head-ends. In the event that head-end equipment vendors restrict access to equipment necessary for manufacturer and third-party testing organizations, MSOs will use commercially reasonable efforts to facilitate the purchase of head-end equipment by CE Manufacturers. Alternatively, MSOs will arrange for CableLabs to make its testing facilities (or optionally MSO facilities) available on fair, reasonable, and non-discriminatory terms.
- 3.10 With respect to encoding rules, the Parties agree to contact the DTLA to discuss the subject of potential infringement claims that could arise as a result of differences between the encoding rule proposal contemplated by this MOU and the “5C” encoding rules.
- 3.11 MSOs and CE Manufacturers acknowledge that technology advances and certain standards may need to transition or sunset. MSO and CE Manufacturers will meet at least annually to discuss technology sunsets, and may submit recommendations to the FCC as part of the biennial review process, or such earlier review as may be appropriate.
- 3.12 The design of Unidirectional Digital Cable Products may not impose additional investment requirements on the cable distribution network, beyond MSO obligations specified in this MOU.
- 3.13 This agreement authorizes the revocation of the POD for products which do not adhere to the compliance and robustness rules as specified in the DFAST License Agreement.

4. Advanced Interactive Digital Cable n ($n = \text{TV, Tuner, etc}$) Product Definition (This is a two-way product)

Both MSOs and CE Manufacturers agree to continue to work together to create appropriate specifications, technical descriptions and labeling/information requirements for Advanced Interactive (two-way) Digital Cable Products.

- 4.1. The Parties will agree upon a recognized term for the advanced interactive digital cable products in summary form. The Parties will discuss whether there should be a requirement to mark product in any way with this name, but both MSOs and CE Manufacturers are encouraged to use this name to promote consumer awareness.
- 4.2. Interoperability Testing and Certification Requirements: Because of the complexity of this type of product, CE Manufacturers agree to a higher level of compliance, and of interoperability testing, leading to self-certification; CE Manufacturers will participate in prototype testing and development of interoperability test suites; further details subject to continued discussion.
- 4.3. Cable operators' EPG will be provided for advanced interactive digital cable products via OCAP or its successor technology.

The understandings set forth herein represent the understandings in principle of the Parties with respect to the matters specified therein. The Parties acknowledge that such understandings that have not been reduced to agreements submitted herewith will be set forth in further detail in subsequent documents to be negotiated by the Parties. It is understood that this MOU shall be construed only as a memorandum of understanding summarizing the discussions between the Parties.

**Recommended Regulations to Ensure Compatibility Between
Digital Cable Systems and Unidirectional Digital Cable Products and to
Provide for Appropriate Labeling of Such Products.**

**Subpart ___ -- Compatibility Between Digital Cable Systems and Unidirectional Digital
Cable Products and Labeling.**

**§ ___ Support For Plug and Play Operation of Unidirectional Digital Cable Products
On Digital Cable Systems.**

- (a) The requirements of this section shall apply to digital cable systems.
- (b) No later than July 1, 2004, cable operators shall support Unidirectional Digital Cable Products, through the provisioning of PODs and services, as follows:
 - (1) Digital cable systems with an activated channel capacity of 750 MHz or greater shall comply with:
 - (i) SCTE 40 2001, as amended by DVS/535 (as of 10/29/02), provided however that with respect to Table B.11, the Phase Noise requirement shall be -86 dB/Hz, and also provided that the “transit delay for most distant customer” requirement in Table B.3 is not mandatory.
 - (ii) ANSI/SCTE 65 2002 (as of 10/29/02), provided however that the referenced Source Name Subtable shall be provided for Profiles 1, 2, and 3.
 - (iii) ANSI/SCTE 54 2002, as amended by DVS/435r4 (as of 10/29/02).
 - (iv) Without limiting the above requirements, cable operators shall also implement the terms of the Feb. 2000 NCTA/CEA PSIP agreement, attached as Appendix A.
 - (2) All digital cable systems shall comply with:
 - (i) ANSI/SCTE 28 2001, as amended by DVS/519r2 (as of 11/5/02).
 - (ii) ANSI/SCTE 41 2001, as amended by DVS/301r4 (as of 10/29/02).
 - (3) Cable operators shall ensure, as to all digital cable systems, an adequate supply of PODs that comply with the standards specified in Section (b)(2) to ensure convenient access to such PODs by customers. Without limiting the foregoing, cable operators may provide more advanced PODs

(i.e., PODs that are based on successor standards to those specified in Section (b)(2)) to customers whose Unidirectional Digital Cable Products are compatible with the more advanced PODs.

(4) Cable Operators shall:

(i) Effective December 31, 2003, upon request of a customer, replace any leased high definition set-top box, which does not include a functional IEEE 1394 interface, with one that includes a functional IEEE 1394 interface or upgrade the customer's set-top box by download or other means to ensure that the IEEE 1394 interface is functional.

(ii) Effective July 1, 2005, include both a DVI or HDMI interface and an IEEE 1394 interface on all high definition set-top boxes acquired by a cable operator for distribution to customers.

(iii) Ensure that these cable operator-provided High Definition Set-Top Boxes shall comply with ANSI/SCTE 26 2001 (as of 10/29/02) with transmission of bit-mapped graphics (EIA-799) optional, and shall support the CEA-931-A PASS THROUGH control commands: tune function, mute function, and restore volume function. In addition these boxes shall support the POWER control commands (power on, power off, and status inquiry) defined in A/VC Digital Interface Command Set General Specification Version 4.0 (as referenced in ANSI/SCTE 26 2001).

(5) The Commission will review the standards in this Section on a biennial basis to determine whether any of the regulations adopted herein shall sunset and/or be amended in light of changes in technology or other public interest factors.

§ __. __ **Unidirectional Digital Cable Products.**

(a) The requirements of this section shall apply to Unidirectional Digital Cable Products. Unidirectional Digital Cable Products are one-way devices which include, but are not limited to televisions, set-top-boxes and recording devices, connected to digital cable systems.

(b) A Unidirectional Digital Cable Compatible Television may not be labeled or marketed as "XXX" [XXX="Digital Cable Compatible" or an alternative term to be defined jointly at a later date)] or otherwise marketed as defined below, unless it implements at a minimum the following features. Use of a label to mark the product physically is voluntary. For purposes of this section, "marketed" means using the descriptive terms specified in these rules, or using terminology that describes the device as "cable ready" or "cable compatible," marketing or otherwise indicating the device accepts a POD or that otherwise conveys the impression that the device is compatible with digital cable service.

- (1) Tunes NTSC analog channels that are transmitted in-the-clear.
- (2) Tunes digital channels that are transmitted in compliance with SCTE 40 2001 as amended by DVS/535 (as of 10/29/02), provided, however, that with respect to Table B.11, the phase noise requirement shall be -86 dB/Hz including both in-the-clear channels and channels that are subject to conditional access.
- (3) May navigate channels based on (i) channel information (virtual channel map and source names) provided through the cable system in compliance with ANSI/SCTE 65 2002 (as of 10/29/02) and/or (ii) PSIP-enabled navigation (SCTE 54 2002 as amended by DVS/435r4 (as of 10/29/02)).
- (4) Includes the POD-Host Interface specified in SCTE 28 2001 as amended by DVS/519r2 (as of 11/5/02) and SCTE 41 2001 as amended by DVS/301r4 (as of 10/29/02) or implementation of a more advanced POD-Host Interface based on successor standards. Support for IP flows is not required.
- (5) Responds to Emergency Alerts that are transmitted in compliance with ANSI/SCTE 54 2002, as amended by DVS/435r4 (as of 10/29/02).

(c) In addition to the above requirements, a Unidirectional Digital Cable Compatible Television may not be labeled or marketed either as ["XXX" or "XXX plus YYY"] or otherwise marketed as defined above, unless it employs specified interfaces at a minimum in accordance with the following schedule, provided however that there is no such obligation to incorporate the specified interfaces until there is federal regulation or enactment of a federal law adopting encoding rules and prohibiting selectable output controls.

- (1) For 480p grade Unidirectional Digital Cable Compatible Televisions – as follows (either DVI/HDCP or HDMI/HDCP interfaces, or 480p Y,Pb,Pr interfaces):
 - (i) With screen sizes 36 inches and above – 50% of a manufacturer's models offered for sale effective July 1, 2004; 100% of such models effective July 1, 2005.
 - (ii) With screen sizes 32 to 35 inches – 50% of a manufacturer's models offered for sale effective July 1, 2005; 100% of such models effective July 1, 2006.
- (2) For 720p/1080i (HD) grade Unidirectional Digital Cable Compatible Televisions – as follows (either DVI/HDCP or HDMI/HDCP interfaces):

(i) With screen sizes 36 inches and above – 50% of a manufacturer’s models offered for sale effective July 1, 2004; 100% of such models effective July 1, 2005.

(ii) With screen sizes 25 to 35 inches – 50% of a manufacturer’s models offered for sale effective July 1, 2005; 100% of such models effective July 1, 2006.

(iii) With screen sizes 13 to 24 inches – 100% of a manufacturer’s models offered for sale effective July 1, 2007.

(3) For purposes of this section, screen sizes are to be measured diagonally across the picture viewing area. These screen sizes are stated in the dimensions applied to screen sizes with a traditional 4:3 aspect ratio. When applied to different aspect ratios, the applicable screen size is determined by the vertical measurement. For example, the requirements for a 13” screen size with a 4:3 aspect ratio apply to a DTV receiver with a 7.8” vertical measurement and a 16:9 aspect ratio.

(d) Before a manufacturer’s first Unidirectional Digital Cable Compatible Television may be labeled or marketed (as the term “marketed” is defined at subsection ___(b) above) as [“XXX” or “XXX plus YYY,”] a manufacturer shall self-certify according to the following definitions and procedures.

(1) Definitions:

(i) Test Suite is the set of tests jointly developed and mutually agreed by CableLabs and CEA that can be directly attributed to an applicable normative requirement of one or more of the following standards: SCTE 28 2001 as amended by DVS/519r2 (as of 11/5/02), SCTE 41 2001 as amended by DVS/301r4 (as of 10/29/02), or SCTE 40 2001 as amended by DVS/535 (as of 10/29/02) or portions of EIA-818D and DVS/538 (as of 10/29/02) that specifically address items (A) through (G) of the definition of Critical Test.

(ii) Critical Test is a test in the Test Suite that is essential to ensure the device under test (A) can tune and display (TV products) scrambled digital services via the POD conditional access system, (B) will not technically disrupt, impede or impair delivery of services to cable subscribers, (C) will not cause physical harm to the cable network or the POD, (D) will not facilitate theft of service or otherwise interfere with reasonable actions taken by Cable Operators to prevent theft of service, (E) will not jeopardize the security of any services offered over the cable system, (F) will not interfere with or disable the ability of a Cable Operator to communicate with or disable a POD Module or to disable services being transmitted through a POD Module, or (G) will not impede or impair control of content protection. All other tests are called Non-critical Tests.

(iii) Harm Prevention Test is a test in the Test Suite that shall include appropriate portions of EIA-818D and DVS 538 (as of 10/29/02) that specifically address items (B) through (G) of the definition of Critical Test.

(iv) Self-Certification Documentation is an affirmative statement by the manufacturer that a Unidirectional Digital Cable Television Product model has been tested and has passed the Test Suite.

(v) First Prototype Test Suite Results are the passing results of all Critical Tests in the Test Suite and the results of all tests in the Test Suite for the manufacturer's first model of a Unidirectional Digital Cable Television.

(2) The manufacturer shall bring a prototype of its first model Unidirectional Digital Cable Television Product to CableLabs or an appropriately qualified third-party test facility to execute the Test Suite. Manufacturer shall remedy all Critical Test failures and retest at CableLabs or an appropriately qualified third party test facility. Manufacturer may independently determine how to remedy Non-critical Test failures and may remedy them without retesting of the product at CableLabs or an appropriately qualified third-party test facility. Manufacturer shall submit First Prototype Test Suite Results and Self-Certification Documentation to CableLabs.

(3) For models of a Unidirectional Digital Cable Television Product after the first model, manufacturer shall submit Self-Certification Documentation to CableLabs.

(4) If the manufacturer's first model Unidirectional Digital Cable Product is not a Television, or if the manufacturer's first model Unidirectional Digital Cable Product (whether or not it is a Television) is placed onto the market without being marketed (as the term "marketed" is defined at subsection ___(b) above) or labeled as "XXX" or "XXX plus YYY," the manufacturer shall bring a prototype of said model to CableLabs or an appropriately qualified third-party test facility to execute the Test Suite. Manufacturer shall remedy all Harm Prevention Test failures and retest at CableLabs or an appropriately qualified third party test facility. Manufacturer may independently determine how to remedy all other test failures and may remedy them without retesting of the product at CableLabs or an appropriately qualified third-party test facility. Manufacturer shall submit Harm Prevention Test Results and Self-Certification Documentation to CableLabs.

(5) After delivering Self-Certification Documentation and First Prototype Test Suite Results for a first prototype Unidirectional Digital Cable

Television, manufacturers have no further requirement to test at CableLabs or third-party test facilities.

(e) Manufacturers shall provide in appropriate post-sale material that describes the features and functionality of the product, such as the owner's guide, the following language: "This digital television is capable of receiving analog basic, digital basic and digital premium cable television programming by direct connection to a cable system providing such programming. A security card provided by your cable operator is required to view encrypted digital programming. Certain advanced and interactive digital cable services such as video-on-demand, a cable operator's enhanced program guide and data-enhanced television services may require the use of a set-top box. For more information call your local cable operator."

(f) The Commission will review the standards in this Section on a biennial basis to determine whether any of the regulations adopted herein shall sunset and/or be amended in light of changes in technology or other public interest factors.

Carriage of PSIP over Cable Plants

1. Purpose and Scope

The purpose of this paper is to address issues related to the carriage of PSIP data over cable plants. This paper represents an agreement between the Consumer Electronics Association (CEA) and the National Cable Television Association (NCTA) on carriage of PSIP on cable in support of consumer digital receiving devices (digital receivers) connected directly to the cable TV system. It is also our view that the proposal described here represents an implementable solution that will add value to our collective customer base. In order to ensure that we have agreement on the implementation of PSIP, this paper details the requisite conditions necessary to carry PSIP on cable plants. Further work is needed on detailed aspects of the implementation.

Section 2 outlines a number of technical requirements regarding carriage of PSIP data on cable. Section 3 discusses implementation issues and outlines various scenarios involved in cable signal distribution at cable headends and at uplink centers such as HITS and Athena.

2. Requirements

The following requirements are based on the availability of PSIP data from the content provider. These requirements are aimed at the *carriage* of PSIP through the distribution chain and not its creation.

MSO's will require customers to obtain POD modules to receive scrambled digital services. For a consumer-owned digital receiver directly connected to the cable plant, we state the following requirements regarding PSIP data:

1. A map of all available audio/video services shall be made available to the digital receiver.
 - a. Any given digital receiver may or may not include a functioning POD module at any given time. Therefore, if a digital Transport Stream (TS) includes one or more services carried in-the-clear, that TS shall include virtual channel data in-band in the form of ATSC A/65 (PSIP) and SCTE DVS-097 Rev 7 (once it is harmonized with ATSC A/65). The in-band data shall at minimum describe services carried within the Transport Stream carrying the PSIP data itself.
 - b. A virtual channel table shall be provided out-of-band via the Extended Channel interface from the POD module. Tables to be included shall conform to SCTE DVS 234r1.
2. Each channel shall be identified by a one- or two-part channel number and a textual channel name (for example: "ESPN").

3. PSIP data describing a twelve-hour time period shall be carried for each service in the transport stream. This twelve-hour period corresponds to delivery of the following Event Information Table (EIT) EIT-0, -1, -2 and -3 (or the equivalent data delivered out-of-band). This requirement matches those already in place for digital terrestrial broadcast. The total bandwidth for PSIP data may be limited by the MSO to 80 Kbps for a 27 Mbits multiplex and 115 Kbps for a 38.8 Mbits multiplex.
4. Carriage of descriptive text in the form of PSIP Extended Text Tables (ETTs) is desirable but optional.
5. Event information data may be transported either in-band or out-of band. When sent in-band, Event information data format shall conform to ATSC A/65 PSIP and SCTE DVS-097 Rev 7 (once it is harmonized with ATSC A/65). When sent out-of-band, event information data shall conform to SCTE DVS 234r1 (profiles 4 or higher). In-band data may be used by the digital receiver to augment event information data sent out-of-band. In other words, both in-band and out-of-band data may be present to describe certain services. The digital receiver may collect and use data from both sources (with rules for use of the channel numbers noted).
6. If a reference is made in in-band PSIP to an analog channel, the digital receiver shall use the Transmission Signal ID method to unambiguously link the PSIP data to the analog service (see EIA-752). An analog feed shall include the EIA-752 TSID when PSIP data for that feed is present on an available digital feed. The digital receiver shall not use PSIP data referencing an analog channel unless a matching TSID is found in the analog feed.
7. The channel number identified with out-of-band SI data may or may not match the channel number identified with in-band PSIP data, for all scrambled services. The digital receiver shall use the channel numbers found in the out-of-band SI if a POD module is present.
8. The channel number identified with out-of-band SI data should match the channel number identified with in-band PSIP data, for all unscrambled (in-the-clear) services. This is desirable so that a digital receiver with no POD module installed will label a service the same as one with a POD module present. This may not be possible for all system architectures.

3. Implementation Scenarios

3.1. PSIP in Multiplex

The most fundamental requirement for the MSO is to ensure that if PSIP exists within a multiplex, that it is not stripped from the multiplex and is carried on the cable plant without modification. Figure 1 represents the scenario in which a cable headend downlinks a digital multiplex such as Viewer's Choice utilizing an IRT (integrated receiver/trancoder). In this scenario, Viewer's Choice contains PSIP data that was

created and inserted into the multiplex by Viewer's Choice. In this scenario, the PSIP is simply passed through to the cable plant without modification. Each cable headend has the freedom to up-convert the multiplex to any physical channel. Enough information exists in the digital receiver (from inband PSIP and the Virtual Channel Table) to reconstruct the virtual channel number for each program in the multiplex. To this end, we believe that no changes are necessary to support the passthrough of PSIP on to the cable plant.

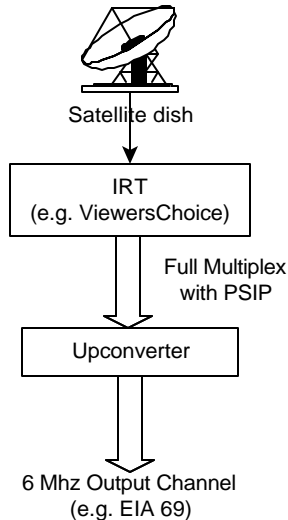


Figure 1. PSIP data on the incoming multiplex is passed through to the cable plant. The PSIP is not and does not have to be modified.

3.2. Content Re-Encoding

A number of content providers, such as HITS and Athena, create customized multiplexes by using content from multiple sources. Figure 2 depicts the scenario in which a number of IRD's are used to receive programs from multiple content providers. Presently, the baseband outputs of the IRD's are fed into the uplink encoder to create a customized multiplex. The Uplink Control System (UCS) is used to set the encoding parameters of each of the programs as well as to assign MPEG services numbers.

In order for PSIP to be correctly carried in the new multiplex, a number of issues need to be addressed. Presently, IRD's do not have a means of extracting PSIP. IRD's simply received and decrypt a given program. It should not prove to be difficult to build an IRD that would extract the PSIP data once the system requirements for this device have been developed. After the PSIP data is extracted from the IRD's, the data needs to be fed into a PSIP aggregator. The purpose of the PSIP aggregator is to coordinate all of the PSIP data and ensure that there are no collisions between the input PSIP streams.

Presently, a PSIP aggregator does not exist, but in principal this can be done and we do not expect there to be any fundamental technical hurdles. We do believe that an appropriate system design is needed before the IRD and aggregator can be built. In

addition, we believe that modifications will be required of the UCS and/or Encoder to support the insertion of the aggregated PSIP stream. The cable industry has begun to discuss with potential vendors the requirements for such devices.

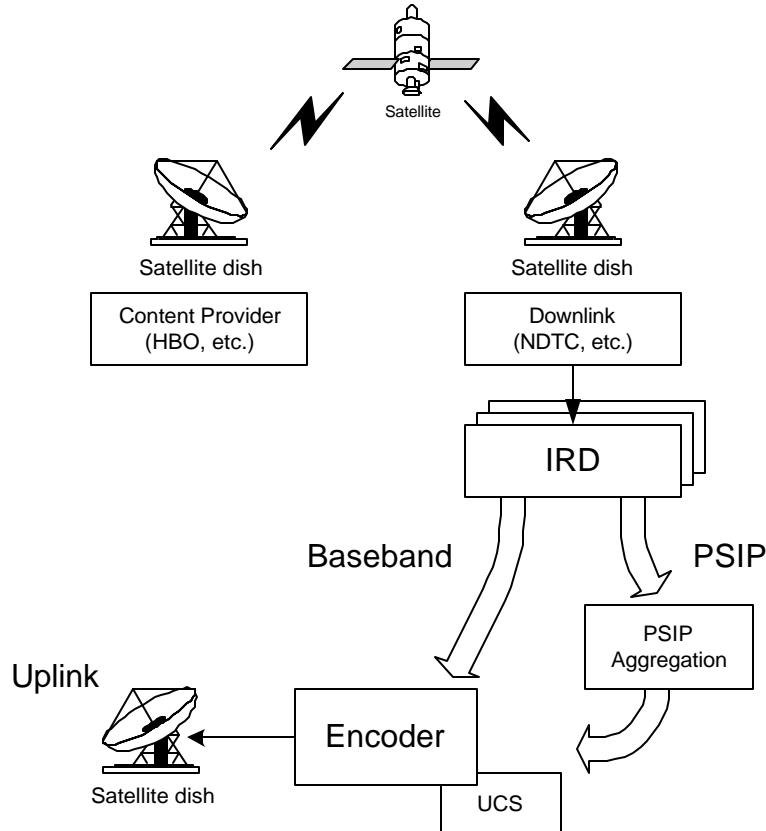


Figure 2. Content re-encoding is used to create custom multiplexes. In order to insert PSIP from each of the programs into the new multiplex, PSIP aggregation will have to be performed.

PSIP data may be present within the downlinked NTSC analog signal. The EIA-806 standard may be used to transmit PSIP data in XDS data packets in the VBI. If so, the PSIP aggregator function in Figure 2 will be designed to accept PSIP in either A/65 or EIA-806 formats, to accommodate digital or analog incoming feeds.

3.3. Content Provider PSIP Creation

In general, uplink providers uplink multiple services for multiple content providers. As an example, AT&T's National Digital Television Center (NDTC) houses playback and editing facilities for the Discovery Channel and Encore, just to name two. Once these content providers source program data for inclusion into PSIP, a means is needed to inject the PSIP into the uplink encoders. Figure 3 schematically depicts a scenario in which an interface is available to the content providers in which program data can be delivered to a PSIP generator. The PSIP generator would in turn create the PSIP stream that would be inserted into the transport multiplex.

Implementation in this scenario requires that an interface specification be developed that provides for a convenient method for content providers to supply program data. A PSIP generator needs to be developed to take program data and create the PSIP stream. The PSIP generator could be the same device used in the previous example to aggregate PSIP. Once created, the PSIP would be inserted into the transport multiplex. We believe that modifications will be needed to the UCS and/or Encoder to support the insertion of the PSIP stream. As in the previous scenarios, we do not see any fundamental technical hurdles, rather the need for a coordinated end-to-end system design.

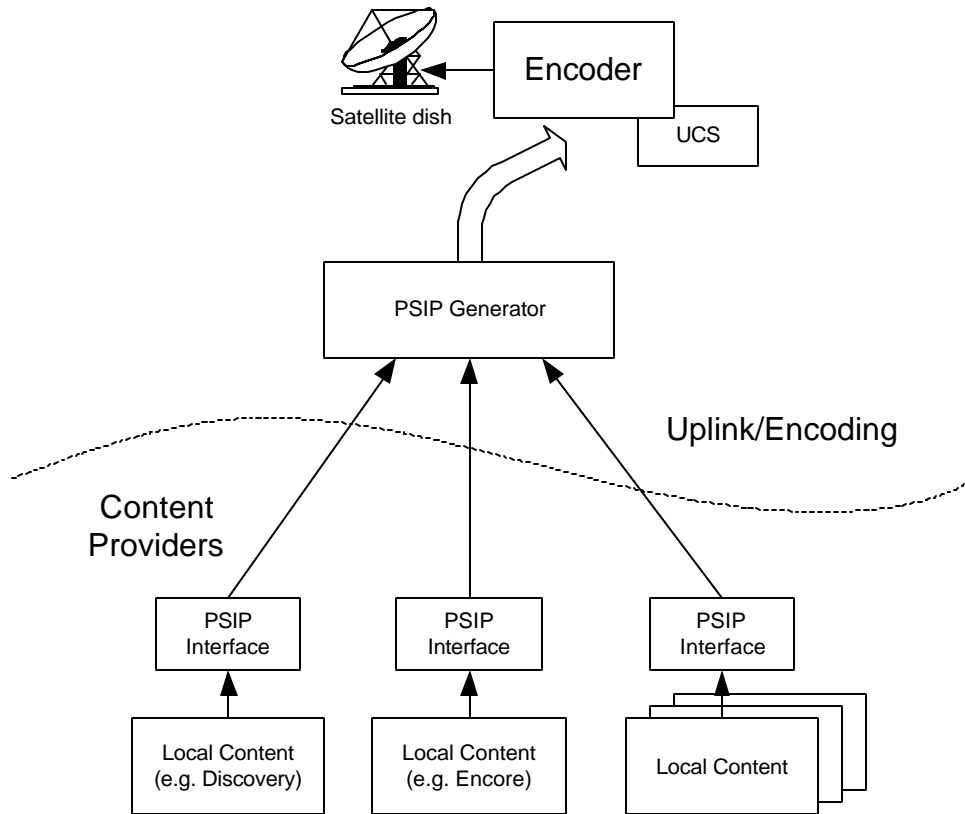


Figure 3. Content providers would transmit program data via the PSIP interface. This data would be used to create the PSIP for the multiplex.

3.4. Remultiplexing

Remultiplexing devices are becoming increasingly popular in order to optimize the use of plant bandwidth. A typical case is where an MSO would like to use one or more programs from one multiplex and combine these programs with one or more programs from another multiplex. Two companies (Terayon and VBITS) presently offer remultiplexing solutions. These products “fix” system information so that service numbers and PIDs are unique within the new multiplex. In order to support the carriage of PSIP, the remultiplexing unit would have to aggregate and coordinate PSIP from multiple sources. Figure 4 depicts this scenario. Remultiplexing units will require modifications to support coordination of PSIP, but we believe that there are no technical

issues that would prohibit this feature from being included into future remultiplexers. Discussions with remultiplexing equipment vendors have begun in order to ensure that they have taken PSIP into consideration for future equipment designs.

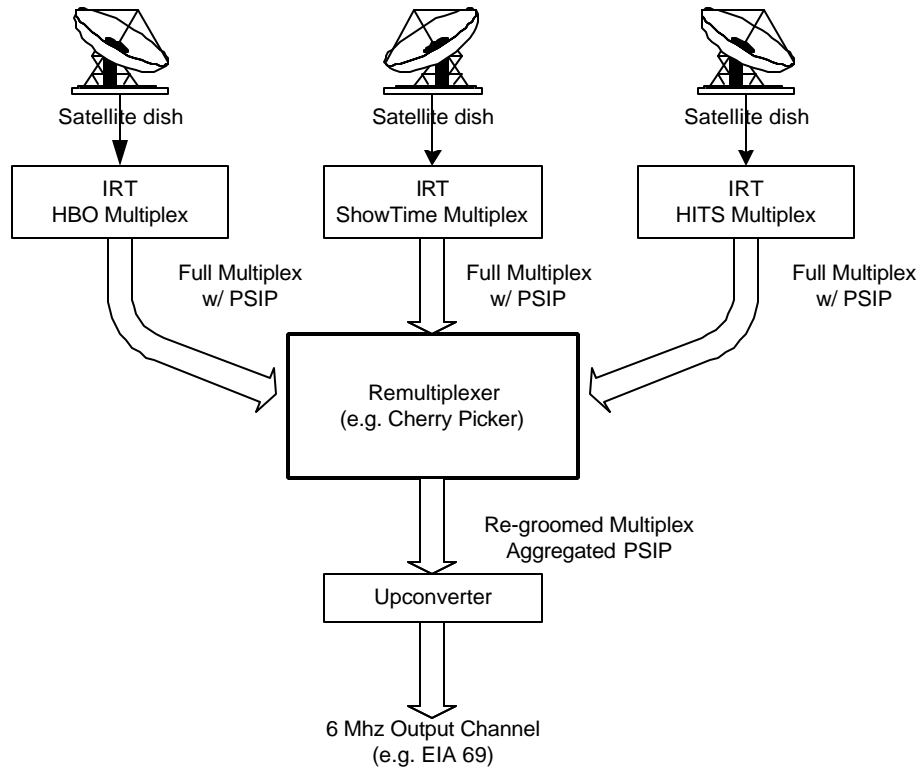


Figure 4. Remultiplexing units will need to aggregate and coordinate PSIP from multiple input sources.

3.5. Master Downlink, Multiple Channel Maps

A number of cable systems (including AT&T and Shaw) utilize a plant architecture in which there is a Master Downlink IRT feeding multiple channel maps. Figure 5 depicts such a scenario. As an example, the Denver Mile High headend provides cable service to Boulder, Littleton and Castle Rock, CO. Each of these local entities employ different channel maps. Thus the in-band PSIP virtual channel number may be irrelevant. Similarly, terrestrial DTV PSIP may not reflect the virtual channel that the broadcast is carried on in the cable plant.

According to requirement #8, “The channel number identified with the out-of-band SI data should match the in-band channel number identified with the in-band PSIP data, for all unscrambled services.” Since it is our position that digital cable programs will be scrambled, there should not be a problem satisfying this requirement. The only possible exception to this is carriage of terrestrial DTV content. We believe that the best approach to satisfying this requirement is to have local coordination with terrestrial broadcasters. We have not worked through all of the scenarios relative to terrestrial content, such as

two-part channel numbers, but believe that we can develop operational guidelines to ensure that the consumer is provided consistent information across multiple platforms.

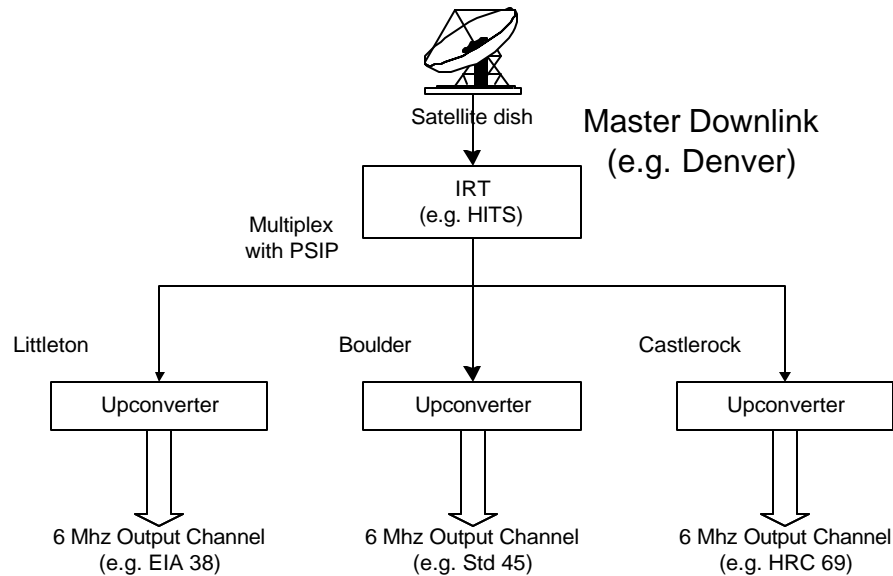


Figure 5. In many instances, a Master Downlink is used to feed multiple headends, thus the in-band PSIP virtual channel number may be irrelevant. Similarly, terrestrial DTV PSIP may not reflect the virtual channel that the broadcast is carried on the cable plant.

4. Implementation Plan

The steps necessary to achieve the requirements set forth above include:

- Systems Engineering
- Product Development
- Product Qualification
- Procurement
- Systems Integration
- Infrastructure buildout
- System Acceptance Testing.

The NCTA believes that this process can be completed in a timely fashion, but will require the active participation of PSIP equipment vendors, content providers (e.g. HBO), cable operators, and consumer electronics manufacturers.

5. Conclusions

The NCTA and the CEA have reached an agreement on the carriage of PSIP for cable. We believe that this implementation of PSIP will add value to the cable offering. In addition, we believe that carriage of PSIP will speed the acceptance of DTV and the associated digital receivers.

A number of issues need to be resolved and system components need to be designed in order to fully implement the system described here. The NCTA is committed to working with the CEA to add further detail to the component specifications. In addition, equipment vendors will be engaged as soon as possible to solicit them for hardware solutions that satisfy the requirements for carriage of PSIP.

ENCODING RULES

As proposed to the FCC
(not effective until adopted by the FCC)

Cross Reference

§76.1211

Each multi-channel video programming distributor shall comply with the requirements of subpart W with respect to the services covered by that subpart.

Part 76, Subpart W

§76.1901 **Applicability**

- (a) Each multi-channel video programming distributor shall comply with the requirements of subpart W.
- (b) These rules shall not apply to distribution of any content over the Internet, nor to a multi-channel video programming distributor's operations via cable modem or DSL.
- (c) With respect to cable system operators, this subpart shall apply only to Cable Services. This subpart shall not apply to cable modem services, whether or not provided by a cable system operator or affiliate.

§76.1902 **Definitions**

“Commercial Advertising Messages” shall mean, with respect to any service, Program, or schedule or group of Programs, commercial advertising messages other than (a) advertising relating to such service itself or the programming contained therein, (b) interstitial programming relating to such service itself or the programming contained therein, or (c) any advertising which is displayed concurrently with the display of any part of such Program(s), including but not limited to “bugs,” “frames” and “banners.”

“Commercial Audiovisual Content” shall mean works that consist of a series of related images which are intrinsically intended to be shown by the use of machines, or devices such as projectors, viewers, or electronic equipment, together with accompanying sounds, if any, regardless of the nature of the material objects, such as films or tapes, in which the works are embodied, transmitted by a Covered Entity and that are (a) not created by the user of a Covered Product and (b) offered for transmission, either generally or on demand, to subscribers or purchasers or the public at large or otherwise for commercial purposes, not uniquely to an individual or a small, private group.

“Commercially-Adopted Access Control Method” shall mean any commercially-adopted access control method, such as CSS, Digicypher, Harmony, DBS and any other

commercially-adopted access control technology, including digitally controlled analog scrambling systems, whether now or hereafter in commercial use.

“Copy Never” shall mean, with respect to Commercial Audiovisual Content, the Encoding of such content so as to signal that such content may not to be copied by a Covered Product.

“Copy One Generation” shall mean, with respect to Commercial Audiovisual Content, the Encoding of such content so as to permit a first generation of copies to be made by a Covered Product but not copies of such first generation of copies.

“Copy No More” shall mean, with respect to Commercial Audiovisual Content, the Encoding of such content so as to reflect that such content is a first generation copy of content Encoded as Copy One Generation and no further copies are permitted.

“Covered Product” shall mean a device used by consumers to access Commercial Audiovisual Content offered by a Covered Entity (excluding delivery via cable modem or the Internet); and any device to which Commercial Audiovisual Content so delivered from such Covered Product may be passed, directly or indirectly.

“Covered Entity” shall mean any entity that is subject to this subpart W.

“Defined Business Model” shall mean Video-on-Demand, Pay-Per View, Pay Television Transmission, Subscription-on-Demand, Non-Premium Subscription Television, Free Conditional Access Delivery and Unencrypted Broadcast Television.

“Encode” shall mean, in the transmission of Commercial Audiovisual Content, to pass, attach, embed, or otherwise apply to, associate with, or allow to persist in or remain associated with such content, data or information which when read or responded to in a Covered Device has the effect of preventing, pausing, or limiting copying, or constraining the resolution of a Program when output from the Covered Device.

“Encoding Rules” shall mean the requirements or prohibitions describing or limiting Encoding of audiovisual content as set forth in this Rule.

“Free Conditional Access Delivery” shall mean a delivery of a service, Program, or schedule or group of Programs via a Commercially-Adopted Access Control Method, where viewers are not charged any fee (other than government-mandated fees) for the reception or viewing of the programming contained therein, other than Unencrypted Broadcast Television.

“Non-Premium Subscription Television” shall mean a service, or schedule or group of Programs (which may be offered for sale together with other services, or schedule or group of Programs), for which subscribers are charged a subscription fee for the reception or viewing of the programming contained therein, other than Pay Television, Subscription-on-Demand and Unencrypted Broadcast Television. By way of example, “basic cable service” and “extended

basic cable service” (other than Unencrypted Broadcast Television) are “Non-Premium Subscription Television.”

“**Pay-Per-View**” shall mean a delivery of a single Program or a specified group of Programs, as to which each such single Program is generally uninterrupted by Commercial Advertising Messages and for which recipients are charged a separate fee for each Program or specified group of Programs. The term “Pay-Per-View” shall also include delivery of a single Program as described above for which multiple start times are made available at time intervals which are less than the running time of such Program as a whole. If a given delivery qualifies both as Pay-Per-View and a Pay Television Transmission, then, for purposes of this Rule, such delivery shall be deemed Pay- Per-View rather than a Pay Television Transmission.

“**Pay Television Transmission**” shall mean a transmission of a service or schedule of Programs, as to which each individual Program is generally uninterrupted by Commercial Advertising Messages and for which service or schedule of Programs subscribing viewers are charged a periodic subscription fee, such as on a monthly basis, for the reception of such programming delivered by such service whether separately or together with other services or programming, during the specified viewing period covered by such fee. If a given delivery qualifies both as a Pay Television Transmission and Pay-Per-View, Video-on-Demand, or Subscription-on-Demand then, for purposes of this Rule, such delivery shall be deemed Pay-Per-View, Video-on-Demand or Subscription-on-Demand rather than a Pay Television Transmission.

“**Program**” shall mean any work of Commercial Audiovisual Content.

“**Subscription-on-Demand**” shall mean the delivery of a single Program or a specified group of Programs for which (i) a subscriber is able, at his or her discretion, to select the time for commencement of exhibition thereof; (ii) where each such single Program is generally uninterrupted by Commercial Advertising Messages; and (iii) for which Program or specified group of Programs subscribing viewers are charged a periodic subscription fee for the reception of programming delivered by such service during the specified viewing period covered by the fee. In the event a given delivery of a Program qualifies both as a Pay Television Transmission and Subscription-on-Demand, then for purposes of this Rule, such delivery shall be deemed Subscription-on- Demand rather than a Pay Television Transmission.

“**Undefined Business Model**” shall mean a business model that does not fall within the definition of a Defined Business Model.

“**Unencrypted Broadcast Television**” means any service, Program, or schedule or group of Programs, that is a further transmission of a broadcast transmission (i.e., an over-the-air transmission for reception by the general public using radio frequencies allocated for that purpose) that substantially simultaneously is made by a terrestrial television broadcast station located within the country or territory in which the entity further transmitting such broadcast transmission also is located, where such broadcast transmission is not subject to a Commercially-Adopted Access Control Method (e.g., is broadcast in the clear to members of the public

receiving such broadcasts), regardless of whether such entity subjects such further transmission to an access control method.

“Video-on-Demand” shall mean a delivery of a single Program or a specified group of Programs for which (i) each such individual Program is generally uninterrupted by Commercial Advertising Messages; (ii) recipients are charged a separate fee for each such single Program or specified group of Programs; and (iii) a recipient is able, at his or her discretion, to select the time for commencement of exhibition of such individual Program or specified group of Programs. In the event a delivery qualifies as both Video-on-Demand and a Pay Television Transmission, then for purposes of this Rule, such delivery shall be deemed Video-on-Demand.

§ 76.1903 Interface and Encoding Rules.

1. Rules As to Interfaces

A Covered Entity shall not attach or embed data or information with Commercial Audiovisual Content, or otherwise apply to, associate with, or allow such data to persist in or remain associated with such content, so as to prevent its output through any analog or digital output authorized or permitted under license, law or regulation governing such Covered Product.

2. Encoding Rules for Defined Business Models

(a) Commercial Audiovisual Content delivered as Unencrypted Broadcast Television shall not be Encoded so as to prevent or limit copying thereof by Covered Products or to constrain the resolution of the image when output from a Covered Product.

(b) Except for (i) a specific determination made by the Commission pursuant to a petition with respect to a Defined Business Model other than Unencrypted Broadcast Television; or (ii) an Undefined Business Model subject to the procedures set forth in this Section:

(A) Commercial Audiovisual Content shall not be Encoded so as to prevent or limit copying thereof except as follows:

(i) to prevent or limit copying of Video-on-Demand, Pay-Per-View, or Subscription-on-Demand transmissions, subject to the requirements of subsection 2(B); and

(ii) to prevent or limit copying, other than first generation of copies, of Pay Television Transmissions, Non-Premium Subscription Television, and Free Conditional Access Delivery transmissions; and

(B) With respect to any Commercial Audiovisual Content delivered or transmitted in the form of a Video-on-Demand, Pay-Per-View or Subscription-on-Demand transmission, a Covered Entity shall not Encode such content so as to prevent a Covered Product, without further authorization, from pausing such content up to 90 minutes from initial transmission by the Covered Entity (e.g., frame-by-frame, minute-by-minute, megabyte by megabyte, etc.).

(c) The Commission may by petition determine whether it would be in the public interest to allow within a Defined Business Model the Encoding of a service other than in accordance with the Encoding Rule set forth in subsections 2(b)(A) and 2(b)(B) applicable to such Defined Business Model.

(i) Petition

The Encoding Rules for Defined Business Models reflect the conventional methods for packaging programs in the MVPD market as of December 31, 2002, and are presumed to be the appropriate rules for Defined Business Models. A Covered Entity may by petition request approval from the Commission for delivering Commercial Audiovisual Content, other than Unencrypted Broadcast Television, pursuant to a Defined Business Model other than as permitted by the Encoding Rules set forth in subsections 2(b)(A) and 2(b)(B). No such petition will be approved under the public interest test set forth below unless the service differs from services provided by any Covered Entity under the applicable Defined Business Model prior to December 31, 2002.

A petition to Encode a service within a Defined Business Model other than as permitted by the Encoding Rules set forth in subsections 2(b)(A) and 2(b)(B) shall describe:

- (1) The Defined Business Model, the service, and the proposed Encoding terms, including the use of Copy Never and Copy One Generation Encoding, and the Encoding of content with respect to “pause” (subsection 2(b)(B)).
- (2) The claimed benefit to consumers of the service, including, but not limited to, the availability of content in earlier release windows, more favorable terms, innovation or original programming;
- (3) The ways in which the service differs from services offered by any Covered Entity within the applicable Defined Business Model prior to December 31, 2002;
- (4) The effect on reasonable and customary expectations of consumers with respect to home recording;
- (5) All other pertinent facts and considerations relied on to support a determination that grant of the Petition would serve the public interest.

Factual allegations shall be supported by affidavit or declaration of a person or persons with actual knowledge of the facts, and exhibits shall be verified by the person who prepares them.

(ii) Comment

The Commission shall give public notice of any such Petition.

Interested persons may submit comments or oppositions to the petition within thirty (30) days after the date of public notice of the filing of such petition. Comments or oppositions shall be served on the petitioner and on all persons listed in petitioner's certificate of service, and shall contain a detailed full statement of any facts or considerations relied on. Factual allegations shall be supported by affidavit or declaration of a person or persons with actual knowledge of the facts, and exhibits shall be verified by the person who prepares them.

The petitioner may file a reply to the comments or oppositions within ten (10) days after their submission, which shall be served on all persons who have filed pleadings and shall also contain a detailed full showing, supported by affidavit or declaration, of any additional facts or considerations relied on. There shall be no further pleadings filed after petitioner's reply, unless authorized by the Commission.

(iii) Commission determination as to Encoding Rule for a new service within a Defined Business Model

(a) In an unrestricted proceeding, unless otherwise specified by the Commission, to determine whether Encoding other than in accordance with the Encoding Rule set forth in subsections 2(b)(A) and 2(b)(B) for the applicable Defined Business Model may be applied to a service within such Defined Business Model, the Covered Entity shall have the burden of proof to establish that the proposed change in Encoding is in the public interest. Within ninety (90) days after the Commission gives public notice of the filing of the original petition, the Commission shall determine whether a grant of the petition is in the public interest. In making such determination, the Commission shall take into account the following factors:

(1) The benefit to consumers of the new service, including but not limited to earlier release windows, more favorable terms, innovation or original programming;

(2) Ways in which the new service differs from services offered by any Covered Entity within the applicable Defined Business Model prior to December 31, 2002;

(3) Reasonable and customary expectations of consumers with respect to home recording

(b) The Commission may specify other procedures, such as oral argument, evidentiary hearing, or further written submissions directed to particular aspects, as it deems appropriate, but in no event shall such other procedures delay the process beyond the timeframe for Commission decision set forth in subsection 2(c)(iii).

(c) A petition may, upon request of the petitioner, be dismissed without prejudice as a matter of right prior to the adoption date of any final action taken by the Commission with respect to the petition. A petitioner's request for the return of a petition will be regarded as a request for dismissal.

(d) Complaint regarding a service not subject to petition.

In an instance in which a party entitled to be a Complainant has a substantial basis to believe and does believe in good faith that a service within a Defined Business Model has been launched without a petition as required by this Rule, such party may file a complaint pursuant to section 76.7 of the Commission's rules, and in appropriate circumstances the Commission shall rule upon the complaint within 90 days.

3. Encoding Rules for Undefined Business Models.

(a) Upon public notice and subject to requirements as set forth herein a Covered Entity may launch a program service pursuant to an Undefined Business Model. Subject to Commission review upon Complaint, the Covered Entity may initially Encode programs pursuant to such Undefined Business Model without regard to limitations set forth in subpart 76.1903(2).

(1) Notice

Concurrent with the launch of an Undefined Business Model by a Covered Entity, the Covered Entity shall issue a press release to the PR Newswire so as to provide public notice of the Undefined Business Model, and the proposed Encoding terms. The notice shall provide a concise summary of the Commercial Audiovisual Content to be provided pursuant to the Undefined Business Model, and of the terms on which such content is to be available to consumers. Immediately upon request from a party entitled to be a Complainant, the Covered Entity shall make available information that indicates the proposed Encoding terms, including the use of Copy Never or Copy One Generation Encoding, and the Encoding of content with respect to “pause” (subsection 2(b)(B)).

(2) Complaint Process

A manufacturer of a Covered Product, a manufacturer for whom the product was manufactured, or a Covered Entity (“Complainant”) may file a complaint with the Commission objecting to application of Encoding as set forth in the notice.

(a) Pre-complaint resolution

Prior to initiating a complaint with the Commission under this section 3, the Complainant shall notify the Covered Entity that it may file a complaint under this section. The notice must be sufficiently detailed so that the Covered Entity can determine the specific nature of the potential complaint. The potential Complainant must allow a minimum of thirty (30) days from such notice before filing such complaint with the Commission. During this period the parties shall endeavor in good faith to resolve the issue(s) in dispute. If the parties fail to reach agreement within this 30 day period, Complainant may initiate a complaint in accordance with the procedures set forth herein.

(b) Complaint

Within two years of publication of a notice under 3(a)(1), a Complainant may file a complaint with the Commission objecting to application of the Encoding terms to the service at issue. Such complaint shall state with particularity the basis for objection to the Encoding terms.

- (i) The complaint shall contain the name and address of the complainant and the name and address of the Covered Entity.

- (ii) The complaint shall be accompanied by a certification of service on the named Covered Entity.
- (iii) The complaint shall set forth with specificity all information and argument relied upon. Specific factual allegations shall be supported by a declaration of a person or persons with actual knowledge of the facts, and exhibits shall be verified by the person who prepares them.
- (iv) The complaint shall set forth attempts made by the Complainant to resolve its complaint pursuant to subsection (a).

The Commission shall give public notice of the filing of the complaint. Once the Commission has issued such public notice, any person otherwise entitled to be a Complainant shall instead have the status of a person submitting comments under subsection (c) rather than a Complainant.

(c) Comments and Reply

Any person may submit comments regarding the complaint within thirty (30) days after the date of public notice by the Commission. Comments shall be served on the Complainant and the Covered Entity and on any persons listed in relevant certificates of service, and shall contain a detailed full statement of any facts or considerations relied on. Specific factual allegations shall be supported by a declaration of a person or persons with actual knowledge of the facts, and exhibits shall be verified by the person who prepares them.

The Covered Entity may file a Response to the Complaint and comments within twenty (20) days after the date that comments are due. Such Response shall be served on all persons who have filed complaints or comments and shall also contain a detailed full showing, supported by affidavit or declaration, of any additional facts or considerations relied on. Replies shall be due ten (10) days from the date for filing a Response.

There shall be no further pleadings filed, unless authorized by the Commission.

(3) Commission determination as to encoding terms for an Undefined Business Model

In an unrestricted proceeding, unless otherwise specified by the Commission, to determine whether Encoding terms as noticed may be applied to an Undefined Business Model, the Covered Entity shall have the burden of proof to establish that application of the Encoding terms in the Undefined Business Model is in the public interest. In making any such determination, the Commission shall take into account the following factors:

- (i) The benefit to consumers of the new service, including but not limited to earlier release windows, more favorable terms, innovation or original programming;

(ii) Ways in which the new service differs from services offered by any Covered Entity prior to December 31, 2002;

(iii) Reasonable and customary expectations of consumers with respect to home recording.

(4) Determination

(A) Within ninety (90) days of the Commission's public notice of the complaint, the Commission shall determine whether to approve the Encoding terms as noticed.

(B) The Commission may specify other procedures, such as oral argument, evidentiary hearing, or further written submissions directed to particular aspects, as it deems appropriate, but in no event shall such other procedures delay the process beyond the timeframe for Commission decision set forth herein.

(b) Complaint re a service not subject to notice.

In an instance in which a party entitled to be a Complainant has a substantial basis to believe and believes in good faith that a service pursuant to an Undefined Business Model has been launched without requisite notice, such party may file a complaint pursuant to section 76.7 of the Commission's rules, and in appropriate circumstances the Commission shall rule upon the complaint within 90 days.

4. Temporary Bona Fide Trials. The obligations and procedures as to Encoding Rules set forth in 2(b) and (c) and 3(a) and (b) do not apply in the case of a temporary bona fide trial of a service.

5. Certain Practices Not Prohibited. Nothing in this Rule shall be construed as prohibiting a Covered Entity from:

(a) encoding, storing or managing Commercial Audiovisual Content within its distribution system or within a Covered Product under the control of a Covered Entity's Commercially-Adopted Access Control Method, provided that the outcome for the consumer from the application of the Encoding Rules set out in sections 2(a) and (b) is unchanged thereby when such Commercial Audiovisual Content is released to consumer control, or

(b) causing, with respect to a specific Covered Product, the output of content from such product in a format as necessary to match the display format of another device connected to such product, including but not limited to providing for content conversion between widely-used formats for the transport, processing and display of audiovisual signals or data, such as between analog and digital formats and between PAL and NTSC or RGB and Y,Pb,Pr.

**DFAST TECHNOLOGY LICENSE AGREEMENT
FOR UNIDIRECTIONAL DIGITAL CABLE PRODUCTS**

THIS LICENSE AGREEMENT (the “**Agreement**”) is made as of _____ (the “Effective Date”), by and between _____, having a place of business at _____ (“**Licensee**”), and **CABLE TELEVISION LABORATORIES, INC.**, having a place of business at 400 Centennial Parkway, Louisville, Colorado, USA 80027-1266 (“**CableLabs**”).

WHEREAS, CableLabs is a research and development company funded by the cable television industry;

WHEREAS, CableLabs has acquired the rights to the DFAST scrambling technology, portions of which are embodied in a U.S. patent;

WHEREAS, Licensee is in the business of, among other things, designing, developing, manufacturing and distributing products related to digital television; and

WHEREAS, this Agreement provides a right to use the DFAST scrambling technology;

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants and agreements set forth herein, the parties hereby agree as follows:

1. DEFINITIONS. In addition to terms defined elsewhere in this Agreement, the following terms shall have the following meanings. All definitions herein shall apply equally to their singular and plural forms, all pronouns shall apply without regard to gender, and all references to Sections and Exhibits shall be deemed to be references to Sections of, and Exhibit to, this Agreement unless the context shall otherwise require.

1.1 “Cable Operator” means any cable operator that CableLabs identifies on its <www.cablelabs.com> website as a member and any other cable operator that provides POD Modules to customers in connection with the provision of cable services in North America.

1.2 “Compliance Rules” mean the rules described in Exhibit B hereto, as such rules may be amended from time to time pursuant to Section 6.2.

1.3 “Compliant” refers to a product that is in compliance with all applicable Compliance Rules and Robustness Rules.

1.4 “Controlled Content” means content that has been transmitted from the POD Module with the encryption mode indicator (“EMI”) bits set to a value other than zero, zero (0,0).

1.5 “Derivative Work” means any work that is based upon DFAST Technology, other than the Referenced Technology, such as a revision, improvement, enhancement, modification, translation, abridgment, condensation, expansion, collection, compilation or other form in which such DFAST Technology may be recast, transformed, ported or adapted and that, if prepared without authorization of CableLabs, would constitute infringement of the DFAST Technology.

1.6 “DFAST Technology” means the Licensed Patents collectively with the Licensed Know-How.

1.7 “Documentation” means user manuals and other written materials (whether in print or electronic form) that relate to the DFAST Technology that have been provided by CableLabs hereunder, including materials for design (for example, flow charts and principles of installation, configuration, administration, and operation) and machine readable text or graphic files subject to display or print-out.

1.8 “Encoding Rules” means the rules of the United States Federal Communications Commission applicable to use of the Compliance Rules.

1.9 “Essential Patent Claim(s)” means claims of a patent or patent application pending on the effective date of this Agreement, issued now or in the future, that are necessarily infringed by those portions of Unidirectional Digital Cable Products that implement inventions claimed in US Patent 4,860,353. Without limiting the foregoing, Essential Patent Claims shall not include (a) any claims relating to semiconductor manufacturing technology; (b) claims relating to aspects of any technology or standard that is not itself part of the Referenced Technology (including by way of example, CSS, MPEG, IEEE 1394, DES, NRSS and smart card technology) even if such standard may otherwise be mentioned or required by the Referenced Technology; (c) claims which, if licensed, would require a payment of royalties by the licensor to unaffiliated third parties; (d) claims relating to any technology introduced into the Referenced Technology, the Compliance Rules or the Robustness Rules pursuant to changes made in accordance with Section 6; or (e) any claims other than those that are necessarily infringed by those portions of Unidirectional Digital Cable Products that implement the inventions claimed in US Patent 4,860,353, even if contained in the same patent as such claim(s).

1.10 “Intellectual Property Rights” means all intellectual property rights arising under statutory law, common law or by contract, and whether or not perfected, including, without limitation, all (a) patents, patent applications and patent rights, (b) rights associated with works of authorship including copyrights, copyright applications, copyright registrations, mask work rights, mask work applications, mask work registrations, and derivative works of the foregoing, (c) rights relating to the protection of trade secrets and confidential information, (d) trademarks, trade dress, trade name, design patent and service mark rights, whether or not registered and (e) divisions, continuations, continuations in part, renewals, reissues and extensions of the foregoing (as and to the extent applicable) now existing, hereafter filed, issued or acquired.

1.11 “Licensed Components” means component products which utilize the DFAST Technology and are designed for incorporation into Unidirectional Digital Cable Products.

1.12 “Licensed Know-How” means all know-how, associated technology, trade secrets, copyrighted works, reference source code implementations, shared secret keys, Diffie-Hellman system parameters, encryption and decryption keys, software development tools, methodologies, processes, technologies or algorithms, test data sets and test cases and other implementations of technology that CableLabs shall deliver to Licensee to assist in incorporating the DFAST Technology into Licensed Components, Prototypes, or Unidirectional Digital Cable Products.

1.13 “Licensed Patents” means U.S. Patent 4,860,353, any application, division, continuation or continuation in part of the foregoing patent, any patent reissuing on or reissuing pursuant to a reexamination of the foregoing patent and all foreign equivalents that CableLabs owns or has the rights to license.

1.14 “Prototype” means a pre-production model of a Unidirectional Digital Cable Product that is not sold commercially.

1.15 “POD Module” means an individual addressable device for authorizing and de-authorizing the decryption or descrambling of services and individual programs and events delivered through the Unidirectional Digital Cable Product on a service by service or individual program or event basis.

1.16 “Referenced Technology” means those standards set forth on Exhibit A hereto; provided however, Referenced Technology does not include any third party proprietary technology referenced in or required by such standards, such as DES, DTCP, or MPEG-2.

1.17 “Robustness Rules” mean the rules described in Exhibit C hereto, as such rules may be amended from time to time in accordance with Section 6.2.

1.18 “Test Tools” means devices that (a) utilize the DFAST Technology and have as their purpose the testing or verification of the performance of, or (b) are specifically designed for the purpose of testing or verification of the performance of, Unidirectional Digital Cable Products and Prototypes.

1.19 “Unidirectional Digital Cable Products” means unidirectional (“one-way”) digital television products (including without limitation, televisions, set-top-boxes and recording devices) that use the DFAST Technology. Unidirectional Digital Cable Products shall not include interactive (“two-way”) digital television products, including, without limitation, products that are capable of obtaining access to video-on-demand or impulse pay-per-view services, of using the return path of the cable system, or of using electronic program guide services provisioned by the Cable Operator.

2. SCOPE

2.1 License for Unidirectional Digital Cable Products. A license is granted herein only for Compliant Unidirectional Digital Cable Products, Licensed Components and Prototypes and Test Tools. No license is granted hereunder for manufacture, sale or distribution of advanced interactive (two-way) digital cable products.

2.2 Unidirectional Digital Cable Products. Unidirectional Digital Cable Products at the time of manufacture shall be Compliant and shall conform to the Referenced Technology as required by this Agreement. No feature or functionality of a Unidirectional Digital Cable Product, as manufactured and distributed, shall (a) technically disrupt, impede or impair the delivery of services to a cable customer; (b) cause physical harm to the network or the POD; (c) facilitate theft of service or otherwise interfere with reasonable actions taken by Cable Operators to prevent theft of service; (d) jeopardize the security of any services offered over the cable system; or (e) interfere with or disable the ability of a Cable Operator to communicate with or disable a POD Module or to disable services being transmitted through a POD Module.

3. LICENSE GRANTS AND RESTRICTIONS.

3.1 License for DFAST Technology. Subject to the terms and conditions set forth herein, CableLabs hereby grants to Licensee, and Licensee hereby accepts from CableLabs, a non-exclusive, non-transferable (except as set forth in Sections 3.2, 3.3 and 12.6 hereof) worldwide license under Intellectual Property Rights owned or licensable by CableLabs in the DFAST Technology to:

- (a) possess and use the DFAST Technology to develop and test Prototypes, Test Tools, and Licensed Components;
- (b) distribute the Test Tools and Licensed Components only to entities who have obtained a license from CableLabs for the use of the DFAST Technology (including, without limitation, entities that have obtained such license under PHILA or otherwise) (collectively, “**CableLabs Licensees**”) and have made parties;
- (c) distribute Prototypes to Cable Operators and other entities for the purpose of field trials and technology evaluation and not for retail;
- (d) make, have made, use, sell, offer to sell, import and otherwise distribute in North America Unidirectional Digital Cable Products;
- (e) practice any method or process under the DFAST Technology solely as necessary for the manufacture or use of products using the DFAST Technology in accordance with the terms and conditions of this Agreement;
- (f) Any right granted hereunder to the DFAST Technology is also granted with respect to the DFAST Technology as implemented in a Derivative Work, provided that the

rights granted under this section 3.1(f) shall be subject to all of the limitations set forth in this Agreement with respect to the DFAST Technology;

(g) use and reproduce the Documentation in order to modify the Documentation as reasonably required in connection with Licensee's creation of Derivative Works in accordance with this Agreement; and

(h) distribute the modified Documentation to customers in connection with the distribution of Unidirectional Digital Cable Products in accordance with this Agreement, provided that such modified Documentation shall not reveal any confidential information contained in the DFAST Technology.

3.2 Limited Right for Test Tools. In addition to the rights granted under Section 3.1(a) and 3.1(b), Licensee shall have the limited right to make, have made, use, sell, offer to sell and otherwise distribute Test Tools, subject to the following limitations:

(a) Licensee shall distribute the Test Tools containing the DFAST Technology only to other CableLabs Licensees or have made parties. Licensee must separately maintain records of sales of Test Tools, and Licensee shall provide the names and contact information of each purchaser to CableLabs.

(b) Licensee shall limit the use of Test Tools for the purposes of ensuring proper operation, testing, debugging, integration and tuning. For the purposes of this Section 3.2(b): (i) "testing" shall mean a process of evaluating a Prototype or Unidirectional Digital Cable Product to ensure proper operation; (ii) "debugging" shall mean a process of finding the cause of an error in a Prototype or Unidirectional Digital Cable Product, including analysis for the purpose of exposing possible design flaws; (iii) "integration" shall mean a process of evaluating the performance of a Prototype or a Unidirectional Digital Cable Product with a POD Module to ensure that they properly operate together; and (iv) "tuning" shall mean a process of evaluating and improving a Prototype or Unidirectional Digital Cable Product to work more efficiently with a POD Module.

3.3 Limited Right for Licensed Components. Licensee shall have the limited right to make, have made, use, sell, offer to sell, import and otherwise distribute Licensed Components provided, however, that Licensee shall distribute the Licensed Components only to other CableLabs Licensees or have made parties; and provided further that Licensee must separately maintain records of sales of Licensed Components, and Licensee shall certify, upon request of CableLabs, that Licensed Components have been distributed only to other CableLabs Licensees that are listed on the CableLabs website (www.opencable.com) or to have made parties.

3.4 No Other Licenses Granted. Except as provided herein, no license is granted by CableLabs, either directly or by implication, estoppel, or otherwise, and any rights not expressly granted to Licensee hereunder are reserved by CableLabs. No license is granted for any products (other than Licensed Components, Test Tools and Prototypes) that are not Compliant. All Intellectual Property Rights (except for Derivative Works made by Licensee which shall be

owned by Licensee) in the DFAST Technology shall be and remain the sole property of CableLabs or such companies that have licensed the DFAST Technology to CableLabs, and Licensee shall have no rights or interest in such DFAST Technology other than the rights granted to Licensee under this Agreement. CableLabs retains all right, title and interest in and to the Licensed Know-How used in connection with the DFAST Technology that are trade secrets or proprietary information of CableLabs or its licensors, members or affiliates or are otherwise owned or licensed by CableLabs.

3.5 Availability of Essential Patent Claims on Fair, Reasonable, and Non-Discriminatory Terms. With respect to all Essential Patent Claims owned or controlled by Licensee, Licensee agrees to make licenses, or cause licenses to be made, available for such Essential Patent Claims on terms that are fair, reasonable, and non-discriminatory to any third party that desires to implement or has implemented the DFAST Technology in Unidirectional Digital Cable Products or Licensed Components. Such license may be limited to products or services that are made, sold, or offered for sale in accordance with the terms of such third party's DFAST Technology License Agreement for Unidirectional Digital Cable Products. In addition, Licensee shall only be bound by this Section 3.5 to the extent such third parties submit to an equivalent undertaking with respect to any Essential Patent Claims owned or controlled by such third party.

3.6 Joint Defense of Intellectual Property Claims. If CableLabs on the one hand and/or Licensee on the other hand (each, a "**Defendant**"), should be sued on a single claim or related claims that the DFAST Technology necessarily infringes the patent or other rights of another party (a "**Suit**"), then the Defendants shall, subject to reasonable non-disclosure conditions, provide to each other reasonable non-privileged information and cooperation relating to their Suits, and CableLabs shall (subject to advice of litigation counsel) permit participation in the Suit by a Licensee that is not a Defendant at its own expense. Further, unless Licensee elects to independently defend the Suit, CableLabs and Licensee shall endeavor to negotiate in good faith a joint defense agreement whereby common claims against all Defendants may be defended in a coordinated and efficient manner. Provided that Licensee is a Defendant and is not exercising its right to pursue an independent defense of a Suit, CableLabs and Licensee shall establish a joint steering committee to negotiate in good faith allocations of joint defense costs where possible. Licensee shall have the right, in its sole discretion and at its sole expense, to pursue an independent defense of any Suit.

3.7 Technology Substitution in the Event of a Claim of Infringement. If CableLabs on the one hand or Licensee on the other hand receives notice that the DFAST Technology allegedly infringes a patent of a third party, then CableLabs may, at its sole option and expense, obtain for Licensee the right to use technology that is substantially equivalent to the DFAST Technology and does not infringe such patent.

4. ACTIVATION; DELIVERY OF LICENSED KNOW HOW; PRODUCTION FORECASTS.

4.1 Activation. At any time after Licensee has paid the License Fee (as defined in Section 5.1), Licensee may execute the Activation Notice attached hereto as Exhibit D (the “**Activation Notice**”) in accordance with the procedures set out therein. Prior to Activation, Licensee is not licensed to distribute any products or components hereunder, and the provisions of Sections 3.1, 3.2, and 3.3 and 3.5, 3.6 and 3.7 shall only be applicable after Activation.

4.2 Delivery of Licensed Know-How. CableLabs agrees to deliver to Licensee one copy of the Licensed Know-How within ten days of the receipt by CableLabs of the Activation Notice. Upon the request of such Licensee, CableLabs shall supply such Licensee with one or more additional copies of the Licensed Know-How as may be required for Licensee’s operations. CableLabs reserves the right to charge a reasonable administrative fee in connection with such additional copies. Except as provided in Section 3.1(h), Licensee shall not make further copies of any Licensed Know-How provided pursuant to this Section 4, and shall treat all such information strictly in accordance with the provisions of Sections 7.1 through 7.3.

4.3 Production Forecasts. Licensee, together with other persons who are licensees under a DFAST Technology License Agreement for Unidirectional Digital Cable Products, shall provide to the Consumer Electronics Association (“CEA”) confidential production forecasts of the number of Unidirectional Digital Cable Products that are expected to be entering the marketplace. Such monthly forecasts shall be provided to CEA for a rolling five-month period for five years from the month that the first Unidirectional Digital Cable Product is self-certified. This information shall be provided to CEA with the understanding that CEA shall aggregate such information, and provide the aggregate information to CableLabs on a monthly basis. CableLabs will issue only aggregate unit volume reports to Cable Operators for use in their planning. Except as specifically provided herein, CableLabs and Cable Operators shall not use or disclose information provided under this Section 4.3 in any manner whatsoever.

5. FEES; APPLICABLE TAXES.

5.1 License Fee. As consideration for the licenses granted hereunder, Licensee agrees to pay CableLabs a one-time, non-refundable license fee of \$5,000 (the “**License Fee**”) within thirty days of the Effective Date.

5.2 Applicable Taxes. CableLabs is exempt from income tax in the United States under Section 501(c)(6) of the Internal Revenue Code. The License Fee owed by Licensee to CableLabs is exclusive of, and Licensee shall pay, all sales, use, value added, excise, income tax, and other taxes (other than income taxes) that may be levied upon either party by taxing authorities other than the United States in connection with this Agreement (except for taxes based on CableLabs’ employees) and shall pay all income taxes that may be levied upon Licensee.

6. CHANGES TO GOVERNING DOCUMENTS. The Compliance Rules and the Robustness Rules may be amended from time to time only in accordance with the procedures set forth below.

6.1 Referenced Technology. CableLabs may, from time to time, give notices to Licensee for the purpose of providing advice, correcting any errors or omissions or clarifying, but not materially amending, altering or expanding the Referenced Technology.

6.2 Changes to the Compliance Rules and Robustness Rules. Except for a minor change that does not alter existing requirements or add new requirements, and except for permissive changes that are not binding on licensee (e.g., changes to authorize additional outputs, content protection or copy protection technologies pursuant to Sections 2.4 or 3.5 of the Compliance Rules), CableLabs may change the Compliance Rules and the Robustness Rules only in accordance with this Section 6.2. CableLabs shall notify all DFAST Licensees (as defined below) simultaneously of any changes to the Compliance Rules and Robustness Rules, and Licensee shall be required to comply with such changes within 12 months following the date (the “**Change Notice Date**”) that Licensee is deemed, pursuant to Section 12.7 of this Agreement, to have received the notice from CableLabs setting forth the change in the Compliance Rules or the Robustness Rules (a “**Change Notice**”), or within such longer period as CableLabs may, at its election, specify in a Change Notice, except as provided in this Section 6.2. In the event Licensee, together with either (i) two unaffiliated licensees under a DFAST Technology License Agreement for Unidirectional Digital Cable Products (a “**DFAST Licensee**”), or (ii) such number of other DFAST Licensees that, together with Licensee, constitute a majority of all DFAST Licensees), notifies CableLabs within sixty (60) days following the Change Notice Date that it has a bona fide objection to the change on the grounds that it would materially limit the permitted functionality or capabilities of a Unidirectional Digital Cable Product, or would materially increase its cost or complexity, then the following procedures shall govern whether or not Licensee shall be required to comply with such change:

If the required number of DFAST Licensees specified above notify CableLabs that they object to the change proposed in the Change Notice:

(a) CableLabs and the DFAST Licensees shall attempt in good faith to resolve any objections that the DFAST Licensees may have with respect to the proposed change during the sixty (60) day period following the Change Notice Date.

(b) At any time during such sixty (60) day period, Licensee may file a petition at the FCC for review of the proposed change in accordance with FCC regulations for expedited resolution of disputes regarding proposed changes to the Compliance Rules and Robustness Rules. The parties anticipate that the FCC shall determine in an expedited 90-day proceeding whether the proposed change serves the public interest, taking into account its effect on consumers, Licensees and Cable Operators; competition, innovation, developments in technology; and the need to protect Controlled Content.

(c) If the FCC disapproves the proposed change on or before the date that is one hundred eighty (180) days following the Change Notice Date, the proposed change shall not become effective.

(d) If the FCC approves the proposed change on or before the date that is one hundred eighty (180) days following the Change Notice Date, Licensee shall be required to comply with such changes within twelve (12) months following such approval.

(e) If the FCC fails to approve or disapprove the proposed change within one hundred eighty (180) days following the Change Notice Date, Licensee shall be required to comply with such change within eighteen (18) months following the Change Notice Date.

7. CONFIDENTIALITY

7.1 Confidentiality of Licensed Know-How. As between CableLabs and Licensee, all of the Licensed Know-How is confidential and proprietary to CableLabs or the companies that have licensed to CableLabs. Licensee shall not use or disclose Licensed Know-How in any manner whatsoever other than in connection with the rights granted in Section 3 hereof or as otherwise permitted by this Section 7. Licensee shall implement and maintain security measures in order to keep the Licensed Know-How confidential which are at least as rigorous as Licensee employs for its own confidential information. Licensee shall implement and maintain security measures for reference source code implementations, shared secret keys, Diffie-Hellman system parameters, encryption and decryption keys, private keys and DFAST source and library files that contain DFAST constants (collectively, "Highly Confidential Information"), which are in accordance with commercial practices for managing keys, such measures to include, at a minimum, the following:

(a) Licensee shall transmit Highly Confidential Information only to its affiliates, subcontractors, consultants, agents, employees, customers and representatives who need to know the information, who are informed of the confidential nature of the information, and, in the case of affiliates, representatives, customers, subcontractors and consultants who have agreed in writing to abide by the terms and conditions of this Section 7. Licensee shall identify (by title) individuals with access to such Highly Confidential Information to CableLabs upon request.

(b) Licensee shall maintain a secure location on its premises to be identified to CableLabs in which such Highly Confidential Information shall be stored. Such secure location shall be accessible only by authorized employees who shall be required to sign in and out each time such employees visit such secure location. When such Highly Confidential Information is not in use, such information shall be stored in a locked safe at such secure location. Licensee may store such Highly Confidential Information at more than one secure location with the prior approval of CableLabs, which approval shall not be unreasonably withheld.

(c) Licensee shall maintain a security log of periodic tests of security, shipments of such Highly Confidential Information from one secure location to another (if

applicable), and breaches of security at all secure locations. Licensee shall reasonably cooperate with CableLabs and its employees and agents to maintain the security of such Highly Confidential Information, including by promptly reporting to CableLabs any thefts of such Highly Confidential Information missing from Licensee's possession.

(d) CableLabs shall have the right to review, upon five (5) business days notice, or such earlier time as may be reasonable and required due to special circumstances, the implementation of all security measures at the secure location(s) required hereunder for Highly Confidential Information on an ongoing basis, at reasonable times as agreed between Licensee and CableLabs, subject to a mutually agreed upon reasonable non-disclosure agreement prior to CableLabs' release of Highly Confidential Information to Licensee. Should Licensee prefer that such review be conducted by a third-party auditor, Licensee and CableLabs may agree upon one or more acceptable third-party auditors and a reasonable non-disclosure agreement, prior to CableLabs' release of Highly Confidential Information to Licensee.

7.2 Notification of Unauthorized Use or Disclosure. Licensee shall notify CableLabs immediately upon discovery of any unauthorized use or disclosure of Licensed Know-How, and will cooperate with CableLabs to seek to regain possession of the disclosed Licensed Know-How and to prevent its further unauthorized use or disclosure.

7.3 Liability for Breach of Confidentiality. With respect to information provided by CableLabs to Licensee, Licensee shall be responsible for any breach of Sections 7.1 through 7.2 by its affiliates, subcontractors, consultants, agents, employees, customers (other than CableLabs members), representatives, former affiliates, former agents, former employees, former customers (other than CableLabs members) and former representatives, provided that no obligation of confidentiality is imposed on information which (a) is already in or subsequently enters the public domain through no breach of Licensee's obligations hereunder and which CableLabs failed to remove from public availability or to enjoin such public disclosure within ninety (90) days after the date such information is or becomes generally known as set forth above; (b) is known to Licensee or is in its possession without conduct which would constitute a breach of Licensee's obligations hereunder prior to receipt from CableLabs; (c) is developed independently by Licensee by persons who have not had, either directly or indirectly, access to or knowledge of Licensed Know-How; or (d) is lawfully received by Licensee from another party without a duty of confidentiality to CableLabs. Notwithstanding anything in Sections 7.1 or 7.2 to the contrary, Licensed Know-How may be disclosed by Licensee pursuant to the order or requirements of a court or governmental administrative agency or other governmental body of competent jurisdiction, provided that (x) CableLabs has been notified of such a disclosure request sufficiently in advance to afford CableLabs reasonable opportunity to obtain a protective order or otherwise prevent or limit the scope of such disclosure to the extent permitted by law and (y) Licensee cooperates in good faith with CableLabs' efforts hereunder. The obligations under Sections 7.1 through 7.3 shall terminate three years after the last commercial use of the DFAST Technology by Licensee or any CableLabs licensee of the DFAST Technology; provided that Sections 7.1(b) through 7.1(d) shall cease to apply when Licensee has returned all tangible embodiments of Licensed Know-How in its possession to CableLabs.

8. TERM AND TERMINATION.

8.1 Term. The initial term of this Agreement shall be the life of the Licensed Patents and then, upon the expiration of the Licensed Patents, the term of this Agreement shall be extended as to the Licensed Know-How automatically thereafter indefinitely on a year by year basis unless earlier terminated according to its terms; provided that under no circumstances shall the term of the license for the Licensed Patents granted pursuant to Section 3 of this Agreement exceed the patent term of the last of the Licensed Patents to expire.

8.2 Termination of Licenses for Cause. CableLabs may terminate the licenses granted hereunder for any specific model of Unidirectional Digital Cable Product that, at the time of manufacture, is in material breach of the Robustness Rules, the Compliance Rules or Section 2.2. However, CableLabs may only terminate the licenses pursuant to this Section 8.2 after the potential for a cure at low cost at the headend for the relevant service has been evaluated as a reasonable alternative and CableLabs has (a) thoroughly evaluated the potential breach with respect to the relevant model of Unidirectional Digital Cable Product, (b) consulted with Licensee regarding the problem, (c) given written notice to Licensee of CableLabs' intent to terminate the license with respect to such model of Unidirectional Digital Cable Product, and (d) provided Licensee with a reasonable opportunity to cure the breach (where such breach is capable of being cured) and such breach remains uncured for sixty days following the date of such notice, or, if such breach cannot by its nature be cured within such period, if Licensee has not commenced, and thereafter at all times diligently pursues, commercially reasonable efforts to cure as soon as possible thereafter. In circumstances where Licensee's failure subjects Controlled Content to an unreasonable risk of unauthorized copying, the maximum period for the activities in clauses (a), (b), (c) and (d) of the preceding sentence shall be forty-five days and the cure period under clause (d) of the preceding sentence shall be thirty days. Termination of the licenses granted for any specific model of Unidirectional Digital Cable Product shall not affect the licenses granted for any other model.

8.3 Termination of Agreement for Cause. CableLabs may terminate this Agreement in the event that CableLabs provides notice of Licensee's material breach of any representation, warranty or covenant set forth in Section 3.3, 5.1, 7.1 through 7.3 or 9.2 hereof and (where such breach is capable of being cured) such breach remains uncured sixty (60) days following the date of such notice.

8.4 Termination by Licensee. Licensee may terminate this Agreement at any time, whether before or after Activation by Licensee, upon sixty (60) days written notice to CableLabs.

8.5 Effect of Termination. Upon the termination of the licenses granted hereunder for any specific model of Unidirectional Digital Cable Product pursuant to Section 8.2, Licensee may no longer make, have made, use, sell, import or distribute such model of Unidirectional Digital Cable Product, nor use the DFAST Technology therewith except that, if the termination did not result from Licensee's failure to satisfy the requirements of the Robustness Rules, or the Compliance Rules, Licensee may sell or distribute any remaining Unidirectional Digital Cable Products in existence at the time of termination. Unless Licensee retains a license with respect to

other models of Unidirectional Digital Cable Products hereunder, Licensee shall immediately return all copies of the DFAST Technology to CableLabs, or destroy all such copies to the reasonable satisfaction of CableLabs. Licenses properly granted to Licensee in conjunction with the sale or distribution of Unidirectional Digital Cable Products by Licensee pursuant to Section 3 prior to the date of termination shall remain in full force and effect. Upon any termination of this Agreement, Licensee shall return all tangible embodiments of Licensed Know-How in its possession to CableLabs. Unless otherwise stated herein, no termination of this Agreement, whether by CableLabs or by Licensee, or termination of any license granted hereunder shall relieve either party of any obligation or liability accrued hereunder prior to such termination, or rescind or give rise to any right to rescind anything done by either party prior to the time such termination becomes effective nor shall the survival provisions of Section 12.12 be affected by such termination.

9. REPRESENTATIONS AND WARRANTIES.

9.1 Representations and Warranties of CableLabs. CableLabs represents, warrants, covenants and agrees as follows:

(a) CableLabs owns all right and title to the DFAST Technology, or otherwise has the right to grant the license thereof, and to the best of CableLabs' knowledge, free of any claim or other encumbrance of any third party. None of the DFAST Technology is or ever has been declared invalid or unenforceable, or is the subject of a pending or threatened action for opposition, cancellation, declaration of invalidity, unenforceability or misappropriation or like claim, action or proceeding.

(b) Without investigation, CableLabs is not aware of any notice or claim, threatened or pending, that the use of the DFAST Technology in accordance with the terms of this Agreement infringes any third party's Intellectual Property Rights. Otherwise, the DFAST Technology is licensed on an "as is" basis.

(c) CableLabs has authorized the person who has signed this Agreement for CableLabs to execute and deliver this Agreement to Licensee on behalf of CableLabs.

(d) This Agreement constitutes a valid and binding obligation of CableLabs, enforceable according to its terms.

9.2 Representations and Warranties of Licensee. Licensee represents, warrants, covenants and agrees as follows:

(a) Licensee has authorized the person who has signed this Agreement for Licensee to execute and deliver this Agreement to Licensee on behalf of Licensee.

(b) This Agreement constitutes a valid and binding obligation of Licensee, enforceable according to its terms.

10. DISCLAIMERS; LIMITATION OF LIABILITY.

10.1 Disclaimers. Each party disclaims all other warranties, express or implied, including, but not limited to, (a) any warranty that the DFAST Technology does not infringe the intellectual property rights of any other person or entity, (b) any warranty that any claims of the Licensed Patent are valid or enforceable, (c) any implied warranties of merchantability and fitness for a particular purpose, or (d) that the rights and licenses granted to Licensee hereunder comprise all the rights and licenses necessary or desirable to practice, develop, make or sell Unidirectional Digital Cable Products. The DFAST Technology and enhancements thereto, and any other items, deliverables, or information supplied by or on behalf of CableLabs are provided on an “as is” basis.

10.2. Limitation of Liability. Except as otherwise specifically limited by this Agreement, the parties shall have all rights available at law or in equity for any breach of this Agreement. In no event shall either party be liable to the other or to any Third-Party Beneficiary (as defined in Section 11) for consequential, incidental, special, indirect, punitive or exemplary damages of any kind, including without limitation loss of profit, savings or revenue, or the claims of third parties, whether or not advised of the possibility of such loss, however caused and on any theory of liability, arising out of this Agreement or based on the making, using, selling or importing any product that implements the DFAST Technology. In no event shall either party be liable to the other or to any Third-Party Beneficiary under any circumstances under this Agreement for any claims that, individually or in the aggregate with all other claims exceed the amount paid by Licensee to CableLabs pursuant to Section 5 herein. Notwithstanding the foregoing, the limitation of liability amount set forth above shall be replaced with a limitation of \$1,000,000 if the liability giving rise to the claim for damages arises out of Licensee’s willful and bad faith material breach of the Compliance Rules, the Robustness Rules, Section 2.2 or any provision of Section 7.1 through 7.3 regarding the security or integrity of the Licensed Know-How.

For purposes of this Agreement, a breach shall be “material” only if Licensee acted in a manner that is prohibited by this Agreement or failed to perform an obligation required under this Agreement, which act or failure has resulted in or would be likely to result in commercially significant harm to CableLabs or a Cable Operator, or constitutes a threat to the integrity or security of the DFAST Technology, or exposes Controlled Content to unauthorized copying. In addition, the following is a non-exclusive list of circumstances in which there is no material breach of the provisions of Sections 7.1 through 7.3: (1) if no Licensed Know-How was released to a third party not permitted hereunder to have such information or could reasonably have been expected to have been released to such third party as a result of the breach; (2) if Licensee maintains an internal program to assure compliance herewith (including a program to assure maintenance of inventory, samples, and confidentiality of information for purposes in addition to compliance with this Agreement), the breach was inadvertent or otherwise unintentional, and the breach did not have a material adverse effect on the integrity or security of the DFAST Technology; or (3) if Licensee brought the breach to CableLabs' attention in a timely manner as required by this Agreement and such breach did not have a material adverse effect on the integrity or security of DFAST Technology.

11 THIRD-PARTY-BENEFICIARY RIGHTS.

11.1 Compliance of Licensee and other licensees with the terms hereof is essential to maintain the value, integrity, security and performance of the DFAST Technology and networks of Cable Operators. As part of the consideration granted herein, Licensee agrees that video programming providers that provide copyrighted works for transmission to Unidirectional Digital Cable Products and the copyright owners of such work (collectively, “**Content Providers**”) and Cable Operators (collectively, “**Third-Party Beneficiaries**”), shall each be a third-party beneficiary of this Agreement, but only with respect to their right to bring a claim or action against Licensee to seek injunctive relief against the manufacture, distribution, commercial use and sale of Licensee’s products that are in material breach of the Compliance Rules, the Robustness Rules or Section 2.2 of this Agreement, and for damages as provided in Section 11.2. In any such claim or action, reasonable attorneys’ fees shall be awarded to the prevailing party.

11.2 Such Third Party Beneficiaries may seek such actual damages (up to the aggregate limits contained in Section 10.2) only after (a) such Third Party Beneficiary has given to CableLabs written notice of the potential breach; (b) the potential for a cure at low cost at the headend for the relevant service has been evaluated as a reasonable alternative; (c) CableLabs has thoroughly evaluated the potential breach with respect to the relevant Unidirectional Digital Cable Product; (d) CableLabs has consulted with Licensee regarding the problem; (e) CableLabs has provided Licensee with a reasonable opportunity to cure the breach (where such breach is capable of being cured) and such breach remains uncured for sixty (60) days following the date of such notice, or, if such breach cannot by its nature be cured within such period, if Licensee has not commenced, and thereafter at all times diligently pursued, commercially reasonable efforts to cure as soon as possible thereafter; and (f) CableLabs has used reasonable efforts to inform all Cable Operators of such breach. Third Party Beneficiaries may seek injunctive relief only after providing CableLabs and the Licensee with notice and consultation reasonable under the circumstances with respect to such third party claim. Claims and actions under this Section 11.2 shall be made only for material breaches (as defined in Section 10.2).

12. MISCELLANEOUS

12.1 Independent Contractors. The relationship established between the parties by this Agreement is that of independent contractors. Nothing in this Agreement shall be construed to constitute the parties as partners, joint venturers, co-owners, franchisers or otherwise as participants in a joint or common undertaking for any purpose whatsoever.

12.2 No Trademark Rights Granted. Nothing contained in this Agreement shall be construed as conferring any right to use in advertising, publicity, or other promotional activities any name, trade name, trademark or other designation of either party hereto (including any contraction, abbreviation or simulation of any of the foregoing).

12.3 No Patent Solicitation Required. Except as expressly provided herein, neither party shall be required hereunder to file any patent application, secure any patent or patent rights,

provide copies of patent applications to the other party or disclose any inventions described or claimed in such patent applications.

12.4 Law and Jurisdiction. THIS AGREEMENT SHALL BE CONSTRUED, AND THE LEGAL RELATIONS BETWEEN THE PARTIES HERETO SHALL BE DETERMINED, IN ACCORDANCE WITH THE LAW OF THE STATE OF NEW YORK, UNITED STATES OF AMERICA, WITHOUT REGARD TO ITS CONFLICT OF LAWS RULES.

(a) IN CONNECTION WITH ANY LITIGATION BETWEEN THE PARTIES HERETO OR IN CONNECTION WITH ANY THIRD-PARTY-BENEFICIARY CLAIM BROUGHT HEREUNDER ARISING OUT OF OR RELATING TO THIS AGREEMENT, EACH PARTY IRREVOCABLY CONSENTS TO: (i) THE EXCLUSIVE JURISDICTION AND VENUE IN THE FEDERAL AND STATE COURTS LOCATED IN THE COUNTY OF NEW YORK, NEW YORK, AND (ii) THE SERVICE OF PROCESS OF SAID COURTS IN ANY MATTER RELATING TO THIS AGREEMENT BY PERSONAL DELIVERY OR BY MAILING OF PROCESS BY REGISTERED OR CERTIFIED MAIL, POSTAGE PREPAID, AT THE ADDRESSES SPECIFIED IN THIS AGREEMENT, OR TO THE AGENT TO BE APPOINTED PURSUANT TO THE SECTION, BELOW.

(b) IF LICENSEE DOES NOT HAVE A PRINCIPAL PLACE OF BUSINESS IN THE UNITED STATES, LICENSEE SHALL APPOINT AGENTS IN THE STATE OF NEW YORK FOR ACCEPTANCE OF SERVICE OF PROCESS PROVIDED FOR UNDER THIS AGREEMENT AND SHALL NOTIFY CABLELABS OF THE IDENTITY AND ADDRESS OF SUCH AGENT WITHIN THIRTY (30) DAYS AFTER THE EFFECTIVE DATE.

(c) LICENSEE WAIVES ANY OBJECTION TO THE JURISDICTION, PROCESS, AND VENUE OF ANY SUCH COURT, AND TO THE EFFECTIVENESS, EXECUTION, AND ENFORCEMENT OF ANY ORDER OR JUDGMENT (INCLUDING, BUT NOT LIMITED TO, A DEFAULT JUDGMENT) OF SUCH COURT PERTAINING TO THIS AGREEMENT, TO THE MAXIMUM EXTENT PERMITTED BY THE LAW OF THE PLACE WHERE ENFORCEMENT OR EXECUTION OF ANY SUCH ORDER OR JUDGMENT MAY BE SOUGHT AND BY THE LAW OF ANY PLACE WHOSE LAW MIGHT BE CLAIMED TO BE APPLICABLE REGARDING THE EFFECTIVENESS, ENFORCEMENT, OR EXECUTION OF SUCH ORDER OR JUDGMENT, INCLUDING PLACES OUTSIDE OF THE STATE OF NEW YORK AND OF THE UNITED STATES.

12.5 Compliance with Laws. In connection with this Agreement, each party shall comply with all applicable regulations and laws, including export, re-export and foreign policy controls and restrictions that may be imposed by any government. Each party shall require its customers to assume an equivalent obligation with regard to import and export controls.

12.6 No Assignment. Licensee shall not assign any of its rights or privileges under this Agreement without the prior written consent of CableLabs, such consent not to be unreasonably withheld or delayed. No consent shall be required for the assignment of this Agreement to any wholly-owned subsidiary of Licensee or for the assignment in connection with

the merger or the sale of Licensee or Licensee's business unit provided that Licensee shall remain liable for its obligations hereunder. Any attempted assignment or grant in derogation of the foregoing shall be void.

12.7 Notice. Any notices required or permitted to be made or given to either party pursuant to this Agreement shall be in writing and shall be delivered as follows with notice deemed given as indicated: (a) by personal delivery when delivered personally; (b) by overnight courier upon written notification of receipt; (c) by telecopy or facsimile transmission upon acknowledgment of receipt of electronic transmission; or (d) by certified or registered mail, return receipt requested, five days after deposit in the mail. All notices must be sent to the address set forth below, or to such other address as the receiving party may have designated by written notice given to the other party:

(a) for **CableLabs**,
Attention: General Counsel
400 Centennial Parkway,
Louisville, CO 80027-1266
fax: 303/661-9199; and

(b) for **Licensee**,

Attention: _____
fax: _____

12.8 Amendments. No amendment or modification hereof shall be valid or binding upon the parties unless made in writing and signed by both parties.

12.9 Waiver. Any waiver by either party of any breach of this Agreement shall not constitute a waiver of any subsequent or other breach.

12.10 Severability. If any provision or provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not be in any way affected or impaired thereby.

12.11 Headings. The headings of the several sections of this Agreement are for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement.

12.12 Survival. The following sections of the Agreement shall survive any termination of the Agreement: Sections 2.2, 3.4, 5.2, 7.1, 7.2, 7.3, 10.1, 10.2, 11.1, 11.2 and 12.12.

12.13 Most Favored Status. CableLabs shall make available to Licensee any license terms made available to any or all manufacturers of Unidirectional Digital Cable Products

pursuant to the DFAST Technology License Agreement for Unidirectional Digital Cable Products. CableLabs also commits that the benefit of any modifications, clarifications or interpretations of language, made by CableLabs or mandated by applicable governmental or judicial authority, in a DFAST Technology License Agreement for Unidirectional Digital Cable Products shall be extended to Licensee in accordance with this Section 12.13. Where CableLabs agrees to make a change to a particular licensee’s DFAST Technology License Agreement for Unidirectional Digital Cable Products, Licensee may incorporate such change, or upgrade to such revised agreement in total, at any time. Where CableLabs has agreed to include language in a particular DFAST Technology License Agreement for Unidirectional Digital Cable Products that is more favorable than that in Licensee's DFAST Technology License Agreement for Unidirectional Digital Cable Products, CableLabs shall not enforce the language in this Agreement with respect to Licensee to the extent that such language is less favorable than that language found in such other licensee’s DFAST Technology License Agreement for Unidirectional Digital Cable Products. CableLabs shall upon the request of Licensee take reasonable steps to keep Licensee informed of any changes to the DFAST Technology License Agreement, and to provide Licensee with the most recent version. It is understood and agreed that PHILA sets forth a separate set of obligations that govern the relationship between the parties thereto, that this Agreement and the changes hereto shall not alter any provisions of any PHILA, and that changes to any PHILA shall not alter the provisions of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly signed and to be effective as of the Effective Date above.

[Licensee]

Cable Television Laboratories, Inc.

Signature: _____

Signature: _____

Printed Name: _____

Printed Name: _____

Title: _____

Title: _____

List of Exhibits:

- Exhibit A Referenced Technology
- Exhibit B Compliance Rules
- Exhibit C Robustness Rules
- Exhibit C-1 Robustness Checklist
- Exhibit D Activation Notice

Exhibit A
Referenced Technology

A Unidirectional Digital Cable Product:

1. Shall include the POD interface, specified in SCTE 28 2001 as amended by DVS/519r2 (as of 11/05/02) and SCTE 41 2001 as amended by DVS/301r4 (as of 10/29/02) Support for IP flows is not required.
2. Shall include portions of EIA-818D and DVS 538 (as of 10/29/02) specifically addressing harm to the network as identified by DFAST Licensees and CableLabs.

Exhibit B

Compliance Rules

Unidirectional Digital Cable Products, at the time of manufacture, must comply with the requirements set forth in this Exhibit and be constructed so as to resist attempts at circumvention of these requirements as specified in Exhibit C, Robustness Rules.

1. Definitions

1.1 “Consensus Watermark” means a watermark that has been developed on a multi-industry basis pursuant to a broad consensus in an open, fair, voluntary process, and that has thereafter been identified in a notice by CableLabs to Licensee as the Consensus Watermark for purposes of this Agreement.

1.2 “Controlled Content” means content that has been transmitted from the POD Module with the encryption mode indicator (“EMI”) bits set to a value other than zero, zero (0,0).

1.3 “DTCP” means that method of encryption, decryption, authentication, key exchange and renewability that is described in the specification entitled “Digital Transmission Content Protection Specification” as may be amended from time to time.

1.4 “HDCP” means that method of authentication, encryption, decryption and renewability for high-bandwidth Digital Copy Protection as described in the specification entitled “High-bandwidth Digital Content Protection revision 1.0” as may be amended from time-to-time.

1.5 “High Definition Analog Form [or] Output” means a format or output that is not digital, and has a resolution higher than Standard Definition Analog Form or Output.

1.6 “Standard Definition Analog Form [or] Output” means a format or output that is not digital, is NTSC RF, Composite, S-Video, Y,Pb,Pr, Y,R-Y,B-Y or RGB and has no more than 483 interlace or progressive active scan lines.

2. Outputs of Controlled Content

2.1 General. A Unidirectional Digital Cable Product shall not output Controlled Content, or pass Controlled Content to any output, except as permitted in this Section 2.

2.2 Standard Definition Analog Outputs. A Unidirectional Digital Cable Product shall not output Controlled Content, or pass Controlled Content to any output, in Standard Definition Analog Form except as provided in Sections 2.2.1 or 2.2.2:

2.2.1 In any transmission through an NTSC RF, Composite, Y,Pb,Pr, Y,R-Y,B-Y, or RGB format analog output (including an S-video output and including transmissions to

any internal copying, recording or storage device) of a signal including Controlled Content, Unidirectional Digital Cable Products shall generate copy control signals in response to the instructions provided in the APS bits of the Copy Control Instruction message for Controlled Content (i.e. trigger bits for Automatic Gain Control and Colorstripe copy control systems, as referenced below). The technologies that satisfy this condition and are authorized hereunder are limited to the following:

- (1) For NTSC analog outputs (including RF, Composite or S-Video), the specifications for the Automatic Gain Control and Colorstripe copy control systems (contained in the document entitled “Specifications of the Macrovision Copy Protection Process for STB/IRD Products” Revision 7.1.S1, October 1, 1999);
- (2) For Y,Pb,Pr or Y,R-Y,B-Y outputs, the appropriate specifications for the Automatic Gain Control copy control system (contained in the document entitled “Specifications of the Macrovision Copy Protection Process for STB/IRD Products” Revision 7.1.S1, October 1, 1999);
- (3) For 480p progressive scan outputs, the appropriate specification for the Automatic Gain Control copy control system (contained in the document entitled “Specification of the Macrovision AGC Copy Protection Waveforms for DVD Applications with 525p (480p) Progressive Scan Outputs, Revision 1.1.1 (August 15, 2002)”).

2.2.2 A Unidirectional Digital Cable Product may output Controlled Content, or pass Controlled Content through a VGA output to a monitor, in Standard Definition Analog Form.

2.3 High Definition Analog Outputs. Unidirectional Digital Cable Products may output Controlled Content, or pass Controlled Content to, High Definition Analog Outputs.

2.4 Digital Outputs. A Unidirectional Digital Cable Product shall not output Controlled Content, or pass Controlled Content, to any output in digital form except as permitted by this Section 2.4.

2.4.1 If a Unidirectional Digital Cable Product includes any form of 1394 output, such Unidirectional Digital Cable Product may output Controlled Content, and pass Controlled Content to such output in digital form where such output is protected by DTCP.

2.4.2 If a Unidirectional Digital Cable Product includes any form of the Digital Visual Interface (“DVI”) output, including High Definition Multimedia Interface (“HDMI”), such Unidirectional Digital Cable Product may output Controlled Content, and pass Controlled Content to such output, in digital form where such output is protected by HDCP.

2.4.3 A Unidirectional Digital Cable Product that outputs Controlled Content may use a copy protection technology other than DTCP or HDCP as may be approved under Section 2.4.4.

2.4.4 CableLabs shall approve or disapprove digital outputs and/or content protection technologies on a reasonable and nondiscriminatory basis within 180 days of submission by a Licensee of a request and all information necessary to evaluate such request. In the event of disapproval, CableLabs will indicate in writing the specific reasons for the disapproval. CableLabs shall not withhold approval of any such output or content protection technology that provides effective protection to Controlled Content against unauthorized interception, retransmission and copying. In making that determination, CableLabs shall take into account (a) the effectiveness of the technology; (b) the license terms governing the secure implementation of the technology; and (c) other objective criteria. In the event that CableLabs disapproves or fails to act within the time specified above, a Licensee may petition the Federal Communications Commission concerning such denial or lack of approval. The parties anticipate that the FCC shall determine in an expedited 90-day proceeding whether the proposed digital output and/or content protection technology provides effective protection to Controlled Content against unauthorized interception, retransmission or copying, taking into account, among other things, the factors utilized by CableLabs. CableLabs agrees to be bound by a final order of the FCC. Notwithstanding the foregoing, in the event that CableLabs is advised that four (4) member studios of the Motion Picture Association approve a digital output or content protection technology that provides effective protection to Controlled Content against unauthorized interception, retransmission or copying, such output or content protection technology shall be deemed approved by CableLabs pursuant to this Section 2.4.4, and upon receipt of notice by CableLabs of such approval by the four studios, CableLabs shall amend these Compliance Rules to include such output and/or content protection technology.

2.5 Protection of the Watermark.

2.5.1 Commencing on the date that CableLabs identifies the Consensus Watermark, Licensee:

- (1) Shall, when selecting among technological implementations for product features of Unidirectional Digital Cable Products and Licensed Components designed after such date, take commercially reasonable care (taking into consideration the reasonableness of the costs of implementation, as well as the comparability of their technical characteristics, of applicable commercial terms and conditions, and of their impact on Controlled Content and on the effectiveness and visibility of the Consensus Watermark) that Unidirectional Digital Cable Products

and Licensed Components do not strip, interfere with or obscure the Consensus Watermark in Controlled Content;

- (2) Shall not design new Unidirectional Digital Cable Products or Licensed Components for which the primary purpose is to strip, interfere with or obscure the Consensus Watermark in Controlled Content; and
- (3) Shall not knowingly promote or knowingly advertise or knowingly cooperate in the promotion or advertising of Unidirectional Digital Cable Products or Licensed Components for the purpose of stripping, interfering with or obscuring the Consensus Watermark in Controlled Content.

2.5.2 Commencing eighteen (18) months after CableLabs identifies the Consensus Watermark, Licensee:

- (1) Shall not produce Unidirectional Digital Cable Products or Licensed Components for which the primary purpose is to strip, interfere with or obscure the Consensus Watermark Controlled Content; and
- (2) Shall not knowingly distribute or knowingly cooperate in distribution of Unidirectional Digital Cable Products or Licensed Components for the purpose of stripping, interfering with or obscuring the Consensus Watermark in Controlled Content.
- (3) This Section 2.5 shall not prohibit a Unidirectional Digital Cable Product or Licensed Component from incorporating legitimate features (i.e., zooming, scaling, cropping, picture-in-picture, compression, recompression, image overlays, overlap of windows in a graphical user interface, audio mixing and equalization, video mixing and keying, downsampling, upsampling, and line doubling, or conversion between widely-used formats for the transport, processing and display of audiovisual signals or data, such as between analog and digital formats and between PAL and NTSC or RGB and Y,Pb,Pr formats, as well as other features as may be added to the foregoing list from time to time by CableLabs by amendment to these Compliance Rules) that are not prohibited by law, and such features shall not be deemed to strip, interfere with or obscure the Consensus Watermark in Controlled Content, provided that (a) Licensee shall, at all times after CableLabs identifies the Consensus Watermark, take commercially reasonable care, in accordance with Section 2.5, that such features in a Unidirectional Digital Cable Product do not strip, obscure, or interfere with the Consensus Watermark in Controlled Content, and (b) Licensee shall not knowingly market or knowingly distribute, or knowingly cooperate in marketing or distributing, such Unidirectional Digital Cable Products or Licensed Components for the purpose of stripping, obscuring or interfering with the Consensus Watermark in Controlled Content.

3. Copying, Recording, and Storage of Controlled Content

3.1 General. Unidirectional Digital Cable Products, including, without limitation, Unidirectional Digital Cable Products with inherent or integrated copying, recording or storage capability shall not copy, record, or store Controlled Content, except as permitted in this section.

3.2 Mere Buffer for Display. Unidirectional Digital Cable Products may store Controlled Content temporarily for the sole purpose of enabling the immediate display of Controlled Content, provided that (a) such storage does not persist or cannot be accessed in usable form after the content has been displayed, and (b) the data is not stored in a way that supports copying, recording, or storage of such data for other purposes.

3.3 Copy No More. Unidirectional Digital Cable Products shall not copy, record or store Controlled Content that is designated in the CCI bits as having been copied but not to be copied further (“copy no more”), except as permitted in section 3.2 or 3.5.2.

3.4 Copy Never. Unidirectional Digital Cable Products, including, without limitation, such a device with integrated recording capability such as a so-called “personal video recorder,” shall not copy Controlled Content that is designated in the CCI bits as never to be copied (“copy never”) except as permitted in section 3.2 or by the following 3.4.1:

3.4.1 Pause. A Unidirectional Digital Cable Product may, without further authorization, pause content as to which Copy Never control has been asserted up to 90 minutes from initial transmission (e.g., frame-by-frame, minute-by-minute, megabyte by megabyte, etc.). Content that has been paused shall be stored in a manner which is encrypted in a manner that provides no less security than 56-bit DES.

3.5 Copy One Generation.

3.5.1 Unidirectional Digital Cable Products may make a copy of Controlled Content that is designated as permissible to be copied for one generation (“Copy One Generation”), as provided in Section 3.2 or provided that the copy is scrambled or is otherwise made secure using one or more of the following methods, such that no further usable copies may be made thereof, or they may treat such Controlled Content as “Copy Never”:

- (1) The copy is scrambled or encrypted using any one generation copy protection technology which is approved by CableLabs. CableLabs shall approve copy one generation copy protection technologies on a reasonable and nondiscriminatory basis within 180 days of submission by a Licensee of a request and all information necessary to evaluate such request. In the event of disapproval, CableLabs will indicate in writing the specific reasons for the disapproval. CableLabs shall not withhold approval of any such copy protection technology that provides effective protection to

Controlled Content against unauthorized interception, retransmission and copying. In making that determination, CableLabs shall take into account (a) the effectiveness of the technology; (b) the license terms governing the secure implementation of the technology; and (c) other objective criteria. In the event that CableLabs disapproves or fails to act within the time specified above, a Licensee may petition the Federal Communications Commission concerning such denial or lack of approval. The parties anticipate that the FCC shall determine in an expedited 90-day proceeding whether the proposed copy protection technology provides effective protection to Controlled Content against unauthorized interception, retransmission or copying, taking into account, among other things, the factors utilized by CableLabs. CableLabs agrees to be bound by a final order of the FCC. Notwithstanding the foregoing, in the event that CableLabs is advised that four (4) member studios of the Motion Picture Association approve a copy protection technology that provides effective protection to Controlled Content against unauthorized interception, retransmission and copying, such copy protection technology shall be deemed approved by CableLabs pursuant to this Section 3.5.1, and upon receipt of notice by CableLabs of such approval by the four studios, CableLabs shall amend these Compliance Rules to include such copy protection technology;

- (2) The copy is stored using an encryption protocol which uniquely associates such copy with a single device so that it cannot be played on another device or, if stored to removable media, so that no further usable copies may be made thereof; or
- (3) Methods which may be approved by CableLabs in the future. Any Copy One Generation copies must be marked or updated so as not to be further copied ("Copy No More").

3.5.2 A Unidirectional Digital Cable Product that makes a copy of content marked in the CCI as "Copy One Generation" in accordance with this Section 3.5 may move such content to a single removable recording medium, or to a single external recording device, only when (a) the external recording device indicates that it is authorized to perform this Move function in accordance with the requirements of this Section, and to copy such Controlled Content in accordance with the requirements of this Section 3.5; (b) such content is marked for transmission by the originating Unidirectional Digital Cable Product as "Copy One Generation"; (c) the content is output over a protected output in accordance with Sections 2.2 or 2.4 of this Exhibit B; (d) before the Move is completed, the originating Unidirectional Digital Cable Product recording is rendered non-useable and the moved content is marked "Copy No More" and (e) the device to which the removable recording medium is moved is unable or rendered unable to output the content except through outputs authorized by these Compliance Rules. Multiple moves consistent with these requirements are not prohibited.

3.6 No Waiver. Licensee acknowledges that the provisions of this Section 3 are not a waiver or license of any copyright interest or an admission of the existence or non-existence of a copyright interest.

Exhibit C

Robustness Rules

1. Construction.

1.1 Generally. The Unidirectional Digital Cable Products as shipped shall meet the Compliance Rules and shall be designed and manufactured in a manner to effectively frustrate attempts to modify such Unidirectional Digital Cable Products to defeat the Compliance Rules or functions of the Referenced Technology.

1.2 Defeating Functions. Unidirectional Digital Cable Products shall not include (i) switches, buttons, jumpers or software equivalents of any of the foregoing, (ii) specific traces that can be cut, or (iii) service menus or functions (including remote-control functions), in each case by which the DFAST Technology, content protection technologies, analog protection systems, Reprotection, output restrictions, recording limitations, or other mandatory provisions of the Referenced Technology or the Compliance Rules can be defeated or by which Controlled Content can be exposed to unauthorized copying. For the purpose of this exhibit, “Reprotection” shall mean the application of an approved protection technology, when required, to Controlled Content received from a POD Module that is to be output from the Unidirectional Digital Cable Product, and the integrity of the system and methods by which such application is assured.

1.3 Keep Secrets. Unidirectional Digital Cable Products shall be designed and manufactured in a manner to effectively frustrate attempts to discover or reveal (i) the unique number, of a specified bit length, assigned to each Unidirectional Digital Cable Product, the numbers used in the process for encryption or decryption of Controlled Content, or the private key used in the process for encryption or decryption of Controlled Content (collectively, “Keys”) and (ii) the methods and cryptographic algorithms used to generate such Keys.

1.4 Documents and Robustness Certification Checklist.

1.4.1 Before releasing any Unidirectional Digital Cable Product, Licensee must perform tests and analyses to assure compliance with this Exhibit C. A Robustness Certification Checklist is attached as Exhibit C-1 for the purpose of assisting Licensee in performing tests covering certain important aspects of this Exhibit C. Inasmuch as the Robustness Certification Checklist does not address all elements required for the manufacture of a Compliant product, Licensee is strongly advised to review carefully the Referenced Technology, the Compliance Rules and this Exhibit C so as to evaluate thoroughly both its testing procedures and the compliance of its Unidirectional Digital Cable Products.

1.4.2 Licensee specifically acknowledges and agrees that it must provide copies of the Referenced Technology, the Compliance Rules, the Robustness Rules, and the Robustness Certification Checklist to its responsible supervisors of product design and manufacture in such manner and at such times as to induce compliance with such materials and completion of the Robustness Certification Checklist.

2. Controlled Content Paths. Controlled Content shall not be available on outputs other than those specified in the Compliance Rules, and, within such Unidirectional Digital Cable Product, Controlled Content shall not be present on any User Accessible Buses (as defined below) in non-encrypted, compressed form. Similarly unencrypted Keys used to support any content encryption and/or decryption in the Unidirectional Digital Cable Product's data shall not be present on any user accessible buses. Notwithstanding the foregoing, compressed audio data may be output to an external Dolby Digital decoder in the clear via the S/PDIF connector. This section shall not apply to navigation data contained in the Program Association Tables (PAT) or the Program Map Tables (PMT). A "User Accessible Bus" means a data bus that is designed for end user upgrades or access such as PCI that has sockets or is otherwise user accessible, SmartCard, PCMCIA, or Cardbus, but not memory buses, CPU buses and similar portions of a device's internal architecture.

3. Methods of Making Functions Robust. Unidirectional Digital Cable Products shall use at least the following techniques to make robust the functions and protections specified in this Agreement:

(a) **Distributed Functions.** The portions of the Unidirectional Digital Cable Product that perform authentication and decryption and the MPEG (or similar) decoder shall be designed and manufactured in a manner associated and otherwise integrated with each other such that Controlled Content in any usable form flowing between these portions of the Unidirectional Digital Cable Product shall be secure to the level of protection described in Section 3(e) below from being intercepted or copied.

(b) **Software.** Any portion of the Unidirectional Digital Cable Product that implements a part of the Referenced Technology in software shall include all of the characteristics set forth in Sections 1 and 2 of this Exhibit C. For the purposes of this Exhibit C, "Software" shall mean the implementation of the functions as to which this Agreement requires a Unidirectional Digital Cable Product to be compliant through any computer program code consisting of instructions or data, other than such instructions or data that are included in Hardware. Such implementations shall:

(i) Comply with Section 1.3 by any reasonable method including but not limited to encryption, execution of a portion of the implementation in ring zero or supervisor mode, and/or embodiment in a secure physical implementation; and in every case of implementation in software, using effective techniques of obfuscation to disguise and hamper attempts to discover the approaches used;

(ii) Be designed to perform self-checking of the integrity of its component parts such that unauthorized modifications will be expected to result in a failure of the implementation to provide the authorized authentication and/or decryption function. For the purpose of this provision, a "modification" includes any change in, or disturbance or invasion of features or characteristics, or interruption of processing, relevant to Sections 1 and 2 of this Exhibit C. This provision requires at a minimum the use of code with a

cyclic redundancy check that is further encrypted with a private key or a secure hashing algorithm or an equivalent level of protection such as encryption with a private key or a secure hashing algorithm; and

(iii) Meet the level of protection outlined in Section 3(e) below.

(c) **Hardware.** Any portion of the Unidirectional Digital Cable Product that implements a part of the Referenced Technology in hardware shall include all of the characteristics set forth in Sections 1 and 2 of this Exhibit C. Such implementations shall:

(i) Comply with Section 1.3 by any reasonable method including but not limited to: embedding Keys, Key generation methods and the cryptographic algorithms in silicon circuitry or firmware that cannot reasonably be read, or the techniques described above for software;

(ii) Be designed such that attempts to reprogram, remove or replace hardware elements in a way that would compromise the security or content protection features of DFAST Technology, Referenced Technology, the Agreement or in Unidirectional Digital Cable Products would pose a serious risk of damaging the Unidirectional Digital Cable Product so that it would no longer be able to receive, decrypt or decode Controlled Content. By way of example, a component that is soldered rather than socketed may be appropriate for this means; and

(iii) Meet the level of protection outlined in Section 3(e) below.

For purposes of these Robustness Rules, “hardware” shall mean a physical device, including a component, that implements any of the content protection requirements as to which this Agreement requires that a Unidirectional Digital Cable Product be compliant and that (x) does not include instructions or data other than such instructions or data that are permanently embedded in such device or component; or (y) includes instructions or data that are not permanently embedded in such device or component where such instructions or data have been customized for such Unidirectional Digital Cable Product or Licensed Component and such instructions or data are not accessible to the end user through the Unidirectional Digital Cable Product or Licensed Component.

(d) **Hybrid.** The interfaces between hardware and software portions of a Unidirectional Digital Cable Product shall be designed so that they provide a similar level of protection which would be provided by a purely hardware or purely software implementation as described above.

(e) **Level of Protection.** The core encryption functions of the Referenced Technology (maintaining the confidentiality of Keys, Key generation methods and the cryptographic algorithms, conformance to the Compliance Rules and preventing compressed Controlled Content that has been unencrypted from copying or unauthorized viewing) shall be implemented in a way that they:

(i) Cannot be reasonably foreseen to be defeated or circumvented merely by using general purpose tools or equipment that are widely available at a reasonable price, such as screwdrivers, jumpers, clips and soldering irons (“Widely Available Tools”), or using specialized electronic tools or specialized software tools that are widely available at a reasonable price, such as EEPROM readers and writers, debuggers or de-compilers or similar software development tools (“Specialized Tools”), other than devices or technologies whether hardware or software that are designed and made available for the specific purpose of bypassing or circumventing the protection technologies required (“Circumvention Devices”); and

(ii) Can only with difficulty be defeated or circumvented using professional tools or equipment (excluding Circumvention Devices and professional tools or equipment that are made available only on the basis of a non-disclosure agreement), such as logic analyzers, chip disassembly systems, or in-circuit emulators or other tools, equipment, methods or techniques not included in the definition of Widely Available Tools and Specialized Tools in subsection (i) above.

(f) **Advance of Technology.** Although an implementation of a Unidirectional Digital Cable Product when designed and shipped may meet the above standards, subsequent circumstances may arise which had they existed at the time of design of a particular Unidirectional Digital Cable Product would have caused such products to fail to comply with this Exhibit C (“New Circumstances”). If Licensee has (a) actual Notice of New Circumstances, or (b) actual knowledge of New Circumstances (the occurrence of (a) or (b) hereinafter referred to as “Notice”), then within eighteen (18) months after Notice Licensee shall cease distribution of such Unidirectional Digital Cable Product and shall only distribute Unidirectional Digital Cable Products that are compliant with this Exhibit C in view of the then-current circumstances.

4. Update Procedure.

CableLabs will meet with cable television system operators, equipment manufacturers and content providers on a regular basis to revise and update these rules to ensure that the Unidirectional Digital Cable Products remain secure against tampering and reverse engineering directed toward defeating the DFAST Technology and any copy protection scheme incorporated therein.

Exhibit C-1

Robustness Checklist

Notice: This Checklist is intended as an aid to the correct implementation of the Robustness Rules for hardware and software implementations of the Referenced Technology in a Unidirectional Digital Cable Product. This Checklist does not address all aspects of the Referenced Technology and Compliance Rules necessary to create a product that is fully compliant. Failure to perform the tests and analysis necessary to comply fully with the Referenced Technology, Compliance Rules or Robustness Rules could result in a breach of this Agreement and appropriate legal action taken by CableLabs or other parties under the License Agreement.

DATE: _____

MANUFACTURER: _____

PRODUCT NAME: _____

HARDWARE MODEL OR SOFTWARE VERSION: _____

NAME OF TEST ENGINEER COMPLETING CHECKLIST:

TEST ENGINEER: _____

COMPANY NAME: _____

COMPANY ADDRESS: _____

PHONE NUMBER: _____

FAX NUMBER: _____

GENERAL IMPLEMENTATION QUESTIONS

1. Has the Unidirectional Digital Cable Product been designed and manufactured so there are no switches, buttons, jumpers, or software equivalents of the foregoing, or specific traces that can be cut, by which the content protection technologies, analog protection systems, output restrictions, recording limitations, or other mandatory provisions of the Referenced Technology or Compliance Rules can be defeated or by which Controlled Content can be exposed to unauthorized copying?

2. Has the Unidirectional Digital Cable Product been designed and manufactured so there are no service menus and no functions (such as remote-control functions, switches, check boxes, or other means) that can intercept the flow of Controlled Content or expose it to unauthorized copying?

3. Has the Unidirectional Digital Cable Product been designed and manufactured so there are no service menus and no functions (such as remote-control functions, switches, check boxes, or other means) that can turn off any analog protection systems, output restrictions, recording limitations, or other mandatory provisions of the Referenced Technology or Compliance Rules?

4. Does the Unidirectional Digital Cable Product have service menus, service functions, or service utilities that can alter or expose the flow of Controlled Content within the device?

If Yes, please describe these service menus, service functions, or service utilities and the steps that are being taken to ensure that these service tools will not be used to expose or misdirect Controlled Content.

5. Does the Unidirectional Digital Cable Product have service menus, service function, or service utilities that can turn off any analog protection systems, output restrictions, recording limitations, or other mandatory provisions of the Referenced Technology or Compliance Rules?

If Yes, please describe these service menus, service functions, or service utilities and the steps that are being taken to ensure that these service tools will not be used to defeat the encryption features of DFAST (including compliance with the Compliance Rules and the Referenced Technology).

6. Does the Unidirectional Digital Cable Product have any user-accessible buses (as defined in Section 2 of the Robustness Rules)?

If so, is Controlled Content carried on this bus?

If so, then:

identify and describe the bus, and whether the Controlled Content is compressed or uncompressed. If such Data is compressed, then explain in detail how and by what means the data is being re-encrypted as required by Section 2 of the Robustness Rules.

7. Explain in detail how the Unidirectional Digital Cable Product protects the confidentiality of all keys.
8. Explain in detail how the Unidirectional Digital Cable Product protects the confidentiality of the confidential cryptographic algorithms used in DFAST.
9. If the Unidirectional Digital Cable Product delivers Controlled Content from one part of the product to another, whether among software modules, integrated circuits or otherwise or a combination thereof, explain how the portions of the product that perform authentication and decryption and the MPEG (or similar) decoder have been designed, associated and integrated with each other so that Controlled Content are secure from interception and copying as required in Section 3(a) of the Robustness Rules.

10. Are any DFAST functions implemented in Hardware?

If Yes, complete hardware implementation questions.

11. Are any DFAST functions implemented in Software?

If Yes, complete software implementation questions.

SOFTWARE IMPLEMENTATION QUESTIONS

12. In the Unidirectional Digital Cable Product, describe the method by which all Keys are stored in a protected manner.

13. Using the grep utility or equivalent, are you unable to discover any Keys in binary images of any persistent memory devices?

14. In the Unidirectional Digital Cable Product, describe the method used to obfuscate the confidential cryptographic algorithms and Keys used in DFAST and implemented in software.

15. Describe the method in the Unidirectional Digital Cable Product by which the intermediate cryptographic values (e.g., values created during the process of authentication between modules or devices within a Unidirectional Digital Cable Product) are created and held in a protected manner.

16. Describe the method being used to prevent commonly available debugging or decompiling tools (e.g., Softice) from being used to single-step, decompile, or examine the operation of the DFAST functions implemented in software.

17. Describe the method by which the Unidirectional Digital Cable Product self-checks the integrity of component parts in such manner that modifications will cause failure of authorization or decryption as described in Section 3(b)(ii) of the Robustness Rules. Describe what happens when integrity is violated.

18. To assure that integrity self-checking is being performed, perform a test to assure that the executable will fail to work once a binary editor is used to modify a random byte of the executable image containing DFAST functions, and describe the method and results of the test.

HARDWARE IMPLEMENTATION QUESTIONS

19. In the Unidirectional Digital Cable Product, describe the method by which all Keys are stored in a protected manner and how their confidentiality is maintained.
20. Using the grep utility or equivalent, are you unable to discover any Keys in binary images of any persistent memory devices?
21. In the Unidirectional Digital Cable Product, describe how the confidential cryptographic algorithms and Keys used in DFAST have been implemented in silicon circuitry or firmware so that they cannot be read.
22. Describe the method in the Unidirectional Digital Cable Product by which the intermediate cryptographic values (e.g., values created during the process of authentication between modules or devices within a Unidirectional Digital Cable Product) are created and held in a protected manner.

Describe the means used to prevent attempts to replace, remove, or alter hardware elements or modules used to implement DFAST functions?

24. In the Unidirectional Digital Cable Product, does the removal or replacement of hardware elements or modules that would compromise the content protection features of DFAST (including the Compliance Rules, the Referenced Technology, and the Robustness Rules) damage the Unidirectional Digital Cable Product so as to render the Unidirectional Digital Cable Product unable to receive, decrypt, or decode Controlled Content?

Notice: This checklist does not supersede or supplant the Referenced Technology, Compliance Rules, or Robustness Rules. The Company and its Test Engineer are advised that there are elements of the Referenced Technology, the Robustness Rules and the Compliance Rules that are not reflected here but that must be complied with.

SIGNATURES:

Signature of Test Engineer with Personal Knowledge of Answers

Date

Printed Name of Test Engineer with Personal Knowledge of Answers

Exhibit D

Activation Notice

Licensee having entered into a DFAST Technology License Agreement for Unidirectional Digital Cable Products (the "License Agreement") with CableLabs, hereby activates its rights under and in accordance with Section 4.1 of the License Agreement, subject to the following:

1. Licensee is a: Unidirectional Digital Cable Product manufacturer
 a component manufacturer
 a manufacturer of test tools
(Check all categories that apply)

2. CableLabs uses a robust, commercially available hybrid cryptographic system to protect the integrity of DFAST Technology transported via common carrier between CableLabs and Licensee. The protection is necessary to ensure the authenticity and confidentiality of the order. CableLabs has chosen Network Associates' PGP to protect this distribution.

It can be obtained from:

U.S. Contact:

McAfee Software
3965 Freedom Circle
Santa Clara, CA USA
95054

Tel: (408) 988-3832

Fax: (408) 970-9727

<http://www.nai.com/>

International Contact:

Network Associates International B.V.

Gatwickstraat 25

1043 GL Amsterdam

The Netherlands

Tel.: +31-(0) 20-586 6100

Fax.: +31-(0) 20-586 6101

<http://www.pgpinternational.com/>

An example of the appropriate product is "PGP Desktop Security" available at <http://store.mcafee.com/>.

Licensee must obtain a copy of PGP and generate a public/private key pair of type Diffie-Hellman/ DSS with a size of 2048/1024. Prior to receiving the DFAST Technology, Licensee will provide its public key to CableLabs on a CD-ROM.

CableLabs will forward the DFAST Technology, encrypting the contents of the order using PGP with Licensee's public key prior to writing it to CDROM media. When Licensee receives the CDROM containing the information from CableLabs, Licensee can decrypt the information using its private key prior to using the cryptographic materials. If for some reason a Licensee cannot use PGP, it should contact CableLabs to arrange an alternative delivery option.

3. CableLabs shall send the DFAST Technology (encrypted as set forth above) necessary to activate the License via overnight delivery service to the attention of _____ at the following address:

4. All capitalized terms not otherwise defined herein shall have the meanings set forth in the License Agreement.

Licensee:

(Name of company)

Authorized Signature

Name

Title

Date

Street Address

City, State, Zip or Postal Code, and Country

Phone Number

Fax Number