

IEEE Standard for Environmental Assessment of Televisions

IEEE Computer Society

Sponsored by the Environmental Assessment Standards Committee

IEEE Standard for Environmental Assessment of Televisions

Sponsor

Environmental Assessment Standards Committee of the **IEEE Computer Society**

Approved 30 August 2012

IEEE-SA Standards Board

Abstract: A clear and consistent set of environmental performance criteria for the design of televisions is established, providing an opportunity for manufacturers to secure market recognition for efforts to reduce the environmental impact of electronic products. This standard is also intended to provide a tool for government, institutional, corporate, and consumer purchasers to identify products that demonstrate environmental leadership. This standard is intended to be updated and revised on a periodic basis to continue to set a higher performance standard for leadership products.

Keywords: electronic product, electronic product design, environment, environmental leadership, environmental performance, IEEE 1680.3, televisions

Copyright © 2012 by The Institute of Electrical and Electronics Engineers, Inc.
All rights reserved. Published 19 October 2012. Printed in the United States of America.

IEEE is a registered trademark in the U.S. Patent & Trademark Office, owned by The Institute of Electrical and Electronics Engineers, Incorporated.

ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency.

PDF: ISBN 978-0-7381-7307-8 STD97282 Print: ISBN 978-0-7381-7359-7 STDPD97282

IEEE prohibits discrimination, harassment, and bullying. For more information, visit http://www.ieee.org/web/aboutus/whatis/policies/p9-26.html. No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

The Institute of Electrical and Electronics Engineers, Inc. 3 Park Avenue, New York, NY 10016-5997, USA

Notice and Disclaimer of Liability Concerning the Use of IEEE Documents: IEEE Standards documents are developed within the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (IEEE-SA) Standards Board. IEEE develops its standards through a consensus development process, approved by the American National Standards Institute, which brings together volunteers representing varied viewpoints and interests to achieve the final product. Volunteers are not necessarily members of the Institute and serve without compensation. While IEEE administers the process and establishes rules to promote fairness in the consensus development process, IEEE does not independently evaluate, test, or verify the accuracy of any of the information or the soundness of any judgments contained in its standards.

Use of an IEEE Standard is wholly voluntary. IEEE disclaims liability for any personal injury, property or other damage, of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, or reliance upon any IEEE Standard document.

IEEE does not warrant or represent the accuracy or content of the material contained in its standards, and expressly disclaims any express or implied warranty, including any implied warranty of merchantability or fitness for a specific purpose, or that the use of the material contained in its standards is free from patent infringement. IEEE Standards documents are supplied "AS IS"

The existence of an IEEE Standard does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to the scope of the IEEE standard. Furthermore, the viewpoint expressed at the time a standard is approved and issued is subject to change brought about through developments in the state of the art and comments received from users of the standard. Every IEEE standard is subjected to review at least every ten years. When a document is more than ten years old and has not undergone a revision process, it is reasonable to conclude that its contents, although still of some value, do not wholly reflect the present state of the art. Users are cautioned to check to determine that they have the latest edition of any IEEE standard.

In publishing and making its standards available, IEEE is not suggesting or rendering professional or other services for, or on behalf of, any person or entity. Nor is IEEE undertaking to perform any duty owed by any other person or entity to another. Any person utilizing any IEEE Standards document, should rely upon his or her own independent judgment in the exercise of reasonable care in any given circumstances or, as appropriate, seek the advice of a competent professional in determining the appropriateness of a given IEEE standard.

Translations: The IEEE consensus development process involves the review of documents in English only. In the event that an IEEE standard is translated, only the English version published by IEEE should be considered the approved IEEE standard.

Official Statements: A statement, written or oral, that is not processed in accordance with the IEEE-SA Standards Board Operations Manual shall not be considered the official position of IEEE or any of its committees and shall not be considered to be, nor be relied upon as, a formal position of IEEE. At lectures, symposia, seminars, or educational courses, an individual presenting information on IEEE standards shall make it clear that his or her views should be considered the personal views of that individual rather than the formal position of IEEE.

Comments on Standards: Comments for revision of IEEE Standards documents are welcome from any interested party, regardless of membership affiliation with IEEE. However, IEEE does not provide consulting information or advice pertaining to IEEE Standards documents. Suggestions for changes in documents should be in the form of a proposed change of text, together with appropriate supporting comments. Since IEEE standards represent a consensus of concerned interests, it is important to ensure that any responses to comments and questions also receive the concurrence of a balance of interests. For this reason, IEEE and the members of its societies and Standards Coordinating Committees are not able to provide an instant response to comments or questions except in those cases where the matter has previously been addressed. Any person who would like to participate in evaluating comments or revisions to an IEEE standard is welcome to join the relevant IEEE working group at http://standards.ieee.org/develop/wg/.

Comments on standards should be submitted to the following address:

Secretary, IEEE-SA Standards Board 445 Hoes Lane Piscataway, NJ 08854 USA

Photocopies: Authorization to photocopy portions of any individual standard for internal or personal use is granted by The Institute of Electrical and Electronics Engineers, Inc., provided that the appropriate fee is paid to Copyright Clearance Center. To arrange for payment of licensing fee, please contact Copyright Clearance Center, Customer Service, 222 Rosewood Drive, Danvers, MA 01923 USA; +1 978 750 8400. Permission to photocopy portions of any individual standard for educational classroom use can also be obtained through the Copyright Clearance Center.

Notice to users

Laws and regulations

Users of IEEE Standards documents should consult all applicable laws and regulations. Compliance with the provisions of any IEEE Standards document does not imply compliance to any applicable regulatory requirements. Implementers of the standard are responsible for observing or referring to the applicable regulatory requirements. IEEE does not, by the publication of its standards, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Copyrights

This document is copyrighted by the IEEE. It is made available for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of engineering practices and methods. By making this document available for use and adoption by public authorities and private users, the IEEE does not waive any rights in copyright to this document.

Updating of IEEE documents

Users of IEEE Standards documents should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of amendments, corrigenda, or errata. An official IEEE document at any point in time consists of the current edition of the document together with any amendments, corrigenda, or errata then in effect. In order to determine whether a given document is the current edition and whether it has been amended through the issuance of amendments, corrigenda, or errata, visit the IEEE-SA Website at http://standards.ieee.org/index.html or contact the IEEE at the address listed previously. For more information about the IEEE Standards Association or the IEEE standards development process, visit IEEE-SA Website at http://standards.ieee.org/index.html.

Errata

Errata, if any, for this and all other standards can be accessed at the following URL: http://standards.ieee.org/findstds/errata/index.html. Users are encouraged to check this URL for errata periodically.

Patents

Attention is called to the possibility that implementation of this standard may require use of subject matter covered by patent rights. By publication of this standard, no position is taken by the IEEE with respect to the existence or validity of any patent rights in connection therewith. If a patent holder or patent applicant has filed a statement of assurance via an Accepted Letter of Assurance, then the statement is listed on the IEEE-SA Website at http://standards.ieee.org/about/sasb/patcom/patents.html. Letters of Assurance may indicate whether the Submitter is willing or unwilling to grant licenses under patent rights without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination to applicants desiring to obtain such licenses.

Essential Patent Claims may exist for which a Letter of Assurance has not been received. The IEEE is not responsible for identifying Essential Patent Claims for which a license may be required, for conducting inquiries into the legal validity or scope of Patents Claims, or determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, if any, or in any licensing agreements are reasonable or non-discriminatory. Users of this standard are expressly advised that determination of the validity of any patent rights, and the risk of infringement of such rights, is entirely their own responsibility. Further information may be obtained from the IEEE Standards Association.

Participants

At the time this IEEE standard was completed, the IEEE 1680.3 Standard Environmental Assessment of Televisions Working Group had the following membership:

Patricia Dillon, Chair John Katz, Vice Chair

Fern Abrams John Handzo Walter Alcorn Mary Harscher Kimbra Andrews LaShetha Hayes James Arnold Carol Hetfield Rachael Baker Garth Hickle Clifford Bast Rick Hicks Werner Becker David Hogan Cate Berard Kim Holliday Michael Biddle Noah Horowitz Allen Blakev Robert Hunn Pamela Brody-Heine Sego Jackson Ashley Carlson Leslie Jackson Stephanie Castorina Jeffrey Jacoby Paul Chalmer Byron Jarratt Susan Chiang Anthony Jasionowski Joyce Choi Richard Kerr Jessian Choy Jum Kim Jenni Chun Larry King Christopher Cleet Michael Kirschner Karen Cook Benjamin Knudson Michael Coop Richard Krock Derek Dao Steve Kuo Sheila Davis Barbara Kyle Shannon Davis Susan Landry Anantha Desikan Gail Lee Victoria Di Lorio Sergei Levchik Sheila Dormody Judy Levin Beth Eckl Jason Linnell Patricia Enneking Kenneth Lowe Ric Erdheim John Macaluso Cindy Erie David Maciel Jon Fairhurst Carole Mars Faridoon Ferhut Ann Mason Stacey Foreman Waverly McFarland Kathy Fox Catalina McGregor Eric Gilbert Dan McNamara Cathie Gosnell Alexandra McPherson Stacy Guidry James Mejia Rob Guzzo Wendy Neu Herman Hall Steve Paolucci

Colleen Pickford Dewey Pitts Charlie Pizarro Karen Pollard John Powers Jack Price Valerie Rickman Wavne Rifer Stephen Risotto Mark Schaffer Sara Schedler Steve Scherrer Robin Schneider Lisa Sepanski Mark Sharp John Short Theodore Smith Douglas Smith Hallie Smith-Petee Yuichi Somemori Renee St. Denis Antoinette Stein Jenny Stephenson Katherine Stewart Marty Strauss Veronique Steukers Joel Tenney Beverley Thorpe Zac Trahan Richard Vernam Jade Wang Todd Washburn Edward Weil Sarah Westervelt Aida Sefic Williams Diane Williams-Hall D'Lane Wisner Joseph Yob Keiko Yokoyama

Anne Peters

The following members of the individual balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

Walter Alcorn Cheri Grasso Greg Luri James Arnold Gregory Griffes John Macaluso Randall Groves Guillaume Artois Koichi Masaaki Stacy Guidry Bakul Baneriee Stephany Mason Scott Bartos Rob Guzzo Taisuke Matsumoto Andy Baynes John Gysbers Richard McCombs Michael Bennett Herman Hall Daniel McNamara John Harauz Cate Berard Alexandra McPherson **David Harrity** James Meiia Michael Biddle Allen Blakev Mary Harscher Marshall Moore Parker Blevins Carol Hetfield Jackson Morrill Terry Boring Laura Heywood Wendy Neu Pamela Brody-Heine Rick Hicks Michael S. Newman Kenneth Burch David Hilbrich Thomas Newton Dongming Cai Brian Hilton Dmitriy Nikolayev Yuji Noritake Robert Campbell Keiko Hirai Thad Carlson Sarah O'Brien Marcelo Hirschler William Carroll Werner Hoelzl Yumiko Oide Graeme Carus William Hoffman Jeffry Omelchuck David Cassano David Hogan Sergio Perez Lebario Stephanie Castorina Kim Holliday Anne Peters Johan A. Catrysse Kim Holmes Brian Phelps Thomas Chang Noah Horowitz Colleen Pickford Roberta Chase William Huggins Charlie Pizarro Gregg Chason Robert Hunn Verena Radulovic Susan Chiang Michael Hutchings Wavne Rifer Keith Chow Takashi Imai Brian Riise Sego Jackson Stephen Risotto Jessian Choy Jenni Chun Jeffrey Jacoby Lauren Roman Lesley Clark Walter Jager Mark Sajbel Christopher Cleet **Byron Jarratt** Heidi Sanborn Takao Sato Michael Coop Anthony Jasionowski Kathleen Curtis Hirofumi Kamibayashiyama Christopher Saunders Bartien Sayogo Derek Dao John Katz Michael Schade Sheila Davis Delvn Kies Anantha Desikan Arthur King Mark Schaffer Michael Kirschner Sara Schedler Paris Dieker Patricia Dillon Christopher Knopp Robin Schneider Benjamin Knudson Paul Schomburg Resa Dimino

Thomas Dineen Hiromi Kobayashi Shigetaka Seki Richard Krock Jennifer Doman Lisa Sepanski Dave Krupar Mark Sharp Sheila Dormody Souray Dutta Rakesh Kumar John Short James Eagan Steven Kuo Gil Shultz Beth Eckl Barbara Kyle Josh Silverman Holly Elwood Robert Landman Chris Slijkhuis Mike Enberg Susan Landry Bill Smith Patricia Enneking Gail Lee **Douglas Smith** Cindy Erie Michelle Lee Janet Smith Holly Evans Justin Lehrer Theodore Smith Jon Fairhurst Sergei Levchik Kent Snyder Peter Fannon Judy Levin Yuichi Somemori Scott Farling Jerker Ligthart Luke Soules Faridoon Ferhut Jason Linnell Renee St. Denis Stacey Foreman Mary Jo Lockbaum Antoinette Stein Kathlyn Fox Erica Logan Michael Stelts Erin Gately Kenneth Lowe Jenny Stephenson

William Lumpkins

Sonya Lunder

Jerry Goerz

Cathie Gosnell

Marty Strauss

Walter Struppler

Stephen Sturdivant Zac Trahan Diane Williams-Hall Michael Swearingen Hiroshi Uramoto D'Lane Wisner Jake Swenson John Vergis Forrest Wright Yuka Takamiya Richard Vernam Masafumi Yamamoto Ke-Hung Tang Todd Washburn Masaaki Yanagi Ikeda Terushi Edward Weil Yutao Yang Kathy Werner Joseph Yob David Thompson Beverley Thorpe Sarah Westervelt Oren Yuen Thomas Traceski Kyle Wiens Janusz Zalewski

When the IEEE-SA Standards Board approved this standard on 30 August 2012, it had the following membership:

Richard H. Hulett, Chair John Kulick, Vice Chair Robert M. Grow, Past Chair Konstantinos Karachalios, Secretary

Satish Aggarwal Alexander Gelman Oleg Logvinov Ted Olsen Masayuki Ariyoshi Paul Houzé Gary Robinson Peter Balma Jim Hughes William Bartley Young Kyun Kim Jon Walter Rosdahl Ted Burse Joseph L. Koepfinger* Mike Seavy Clint Chaplin David J. Law Yatin Trivedi Wael Diab Thomas Lee Phil Winston Jean-Philippe Faure Hung Ling Yu Yuan

Also included are the following nonvoting IEEE-SA Standards Board liaisons:

Richard DeBlasio, *DOE Representative* Michael Janezic, *NIST Representative*

Julie Alessi
IEEE Standards Program Manager, Document Development

Joan M. Woolery
IEEE Standards Program Manager, Technical Program Development

^{*}Member Emeritus

Introduction

This introduction is not part of IEEE Std 1680.3-2012, IEEE Standard for Environmental Assessment of Televisions.

IEEE Std 1680.3-2012 was developed due to a growing demand by purchasers for an easy-to-use evaluation tool that allows the comparison and selection of electronic products based on environmental performance.

This standard is intended to be used by government, institutional, corporate, and consumer purchasers in the selection of electronics products based on environmental performance, and by product designers and manufacturers who wish to sell products that meet environmental performance standards.

Contents

1. Overview	
1.1 Scope	
1.2 Purpose	
1.3 Application	
1.4 Conformance with this standard	2
1.5 Product Registration Entity and Market Surveillance Entity	
1.6 Verification of conformance with this standard	
1.7 Qualified Verifier	
2. Normative references.	3
	-
3. Definitions, special terms, acronyms, and abbreviations	5
3.1 Definitions	
3.2 Special terms	
3.3 Acronyms and abbreviations	
·	
4. Environmental performance criteria for televisions	12
4.1 Environmentally sensitive materials	
4.2 Materials selection	
4.3 Design for end of life	
4.4 Product longevity/life-cycle extension	
4.5 Energy conservation	
4.6 End-of-life management	
4.7 Corporate performance	
4.8 Packaging	
1 worm55	
Annex A (informative) Bibliography	48

IEEE Standard for Environmental Assessment of Televisions

IMPORTANT NOTICE: IEEE Standards documents are not intended to ensure safety, health, or environmental protection, or ensure against interference with or from other devices or networks. Implementers of IEEE Standards documents are responsible for determining and complying with all appropriate safety, security, environmental, health, and interference protection practices and all applicable laws and regulations.

This IEEE document is made available for use subject to important notices and legal disclaimers. These notices and disclaimers appear in all publications containing this document and may be found under the heading "Important Notice" or "Important Notices and Disclaimers Concerning IEEE Documents." They can also be obtained on request from IEEE or viewed at http://standards.ieee.org/IPR/disclaimers.html.

1. Overview

1.1 Scope

This standard defines environmental performance for televisions, television combination units, and component television units, relating to reduction or elimination of environmentally sensitive materials, materials selection, design for end of life, life-cycle extension, energy conservation, end-of-life management, corporate performance, and packaging. This standard applies to products that are primarily marketed as televisions, and does *not* cover computer displays as defined by IEEE 1680.1TM [B12].

1.2 Purpose

This standard for televisions is part of the IEEE 1680TM family of standards that provides a clear and consistent set of performance criteria for the design of electronic products, and provides an opportunity to secure market recognition for efforts to reduce the environmental impact of electronic products. This *television standard* is intended to provide a tool for government, institutional, corporate, and consumer purchasers. Product manufacturers may use this tool to earn recognition in these markets, recognizing that certain criteria may not be applicable to all types of purchasers.

¹ The numbers in brackets correspond to those of the bibliography in Annex A.