IEEE STANDARDS ASSOCIATION

IEEE Standard for Measurement of Emissions from FM and Television Broadcast Receivers in the Frequency Range of 9 kHz to 40 GHz

IEEE Electromagnetic Compatibility Society

Sponsored by the
Standards Development Committee

REDLINE
Shows changes from the previous version!

IEEE
3 Park Avenue
New York, NY 10016-5997
USA

IEEE Std 187™-2018
(Revision of IEEE Std 187-2003)

Documents
Document Sharing Hub

Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.

Full document details: IEEE 187-2018

IEEE Std 187™-2018
(Revision of IEEE Std 187-2003)

IEEE Standard for Measurement of Emissions from FM and Television Broadcast Receivers in the Frequency Range of 9 kHz to 40 GHz

Sponsor

Standards Development Committee
of the
IEEE Electromagnetic Compatibility Society

Approved 15 February 2018

IEEE-SA Standards Board

Documents
Document Sharing Hub

Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.

Full document details: IEEE 187-2018

This is a Redline Document produced by Techstreet, a business of Clarivate Analytics

This document is intended to provide users with an indication of changes from one edition to the next. It includes a full-text version of the new document, plus an indication of changes from the previous version.

Redlines are designed to save time and improve efficiencies by using the latest software technology to find and highlight document changes. More professionals are using valuable new technologies like redlines, to help improve outcomes in a fastpaced global business world.

Because it may not be technically possible to capture all changes accurately, it is recommended that users consult previous editions as appropriate. In all cases, only the current base version of this publication is to be considered the official document.

445 Hoes Lane, Piscataway, NJ 08854 USA | http://standards.ieee.org | Tel. +1 732-981-0060 Fax +1 732-562-1571

Documents
Document Sharing Hub

Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.

Full document details: IEEE 187-2018

Redline Processing Notes:

1. ~~**Red Text**~~ - Red strikethrough text denotes deletions.

2. **Blue Text** - Blue underlined text denotes modifications and additions.

Documents
Document Sharing Hub

Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.

Full document details: IEEE 187-2018

Abstract: Spurious radiation from sound and television broadcast receivers are possible sources of interference with other radio services. This standard describes the potential sources of spurious radiation from receivers intended for the reception of sound and television broadcast, and the measurement methods for them.

Keywords: antenna radiation, conducted emissions, FM sound broadcast receivers, IEEE 187, radiated emissions, spurious emissions, television broadcast receivers

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

Copyright © 2018 by The Institute of Electrical and Electronics Engineers, Inc.
All rights reserved. Published 31 May 2018. 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.

PDF: ISBN 978-1-5044-4763-8 STD23047
Print: ISBN 978-1-5044-4764-5 STDPD23047

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.

Documents
Document Sharing Hub

Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.

Full document details: IEEE 187-2018

Important Notices and Disclaimers Concerning IEEE Standards Documents

IEEE documents are made available for use subject to important notices and legal disclaimers. These notices and disclaimers, or a reference to this page, appear in all standards and may be found under the heading "Important Notices and Disclaimers Concerning IEEE Standards Documents." They can also be obtained on request from IEEE or viewed at http://standards.ieee.org/IPR/disclaimers.html.

Notice and Disclaimer of Liability Concerning the Use of IEEE Standards Documents

IEEE Standards documents (standards, recommended practices, and guides), both full-use and trial-use, are developed within IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association ("IEEE-SA") Standards Board. IEEE ("the Institute") develops its standards through a consensus development process, approved by the American National Standards Institute ("ANSI"), which brings together volunteers representing varied viewpoints and interests to achieve the final product. IEEE Standards are documents developed through scientific, academic, and industry-based technical working groups. Volunteers in IEEE working groups are not necessarily members of the Institute and participate without compensation from IEEE. 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.

IEEE Standards do not guarantee or ensure safety, security, health, or environmental protection, or ensure against interference with or from other devices or networks. Implementers and users 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.

IEEE does not warrant or represent the accuracy or content of the material contained in its standards, and expressly disclaims all warranties (express, implied and statutory) not included in this or any other document relating to the standard, including, but not limited to, the warranties of: merchantability; fitness for a particular purpose; non-infringement; and quality, accuracy, effectiveness, currency, or completeness of material. In addition, IEEE disclaims any and all conditions relating to: results; and workmanlike effort. IEEE standards documents are supplied "AS IS" and "WITH ALL FAULTS."

Use of an IEEE standard is wholly voluntary. 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.

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.

IN NO EVENT SHALL IEEE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO: PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE PUBLICATION, USE OF, OR RELIANCE UPON ANY STANDARD, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE AND REGARDLESS OF WHETHER SUCH DAMAGE WAS FORESEEABLE.

Documents
Document Sharing Hub
Copyright © 2018 IEEE. All rights reserved.
Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.
Full document details: IEEE 187-2018

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 or inferred to be the official position of IEEE or any of its committees and shall not be considered to be, or 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 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. For the same reason, IEEE does not respond to interpretation requests. Any person who would like to participate in revisions to an IEEE standard is welcome to join the relevant IEEE working group.

Comments on standards should be submitted to the following address:

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

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

IEEE draft and approved standards are copyrighted by IEEE under US and international copyright laws. They are made available by IEEE and are adopted 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 these documents available for use and adoption by public authorities and private users, IEEE does not waive any rights in copyright to the documents.

Copyright © 2018 IEEE. All rights reserved.
Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.
Documents
Document Sharing Hub
Full document details: IEEE 187-2018

Photocopies

Subject to payment of the appropriate fee, IEEE will grant users a limited, non-exclusive license to photocopy portions of any individual standard for company or organizational internal use or individual, non-commercial use only. To arrange for payment of licensing fees, 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.

Updating of IEEE Standards 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.

Every IEEE standard is subjected to review at least every 10 years. When a document is more than 10 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 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 Xplore at http://ieeexplore.ieee.org/ or contact IEEE at the address listed previously. For more information about the IEEE-SA or IEEE's standards development process, visit the IEEE-SA Website at http://standards.ieee.org.

Errata

Errata, if any, for all IEEE standards can be accessed on the IEEE-SA Website 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.

Copyright © 2018 IEEE. All rights reserved.
Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.
Documents
Document Sharing Hub
Full document details: IEEE 187-2018

Participants

At the time this IEEE standard was completed, the P187 Working Group had the following membership:

David L. Traver, *Chair*
Mark Arthurs, *Vice Chair*

Jeff Howell
Jon Kanter
Tracy Pruitt

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

Demetrio Bucaneg Jr.
Suresh Channarasappa
Benjamin Cotts
Alistair Duffy
Randall Groves
Timothy Harrington
Werner Hoelzl
Daniel Hoolihan
Sergiu Iordanescu
Jon Kanter
Yeou Song Lee
Arthur H. Light
Michael Newman
Nick S. A. Nikjoo
Ghery Pettit
Iulian Profir
Kenneth Sedziol
Thomas Starai
Walter Struppler
Donald Sweeney
David L. Traver
Lisa Ward
Kimball Williams

When the IEEE-SA Standards Board approved this standard on 15 February 2018, it had the following membership:

Jean-Philippe Faure, *Chair*
Open Position, *Vice Chair*
John D. Kulick, *Past Chair*
Konstantinos Karachalios, *Secretary*

Ted Burse
Guido R. Hiertz
Gary Hoffman
Christel Hunter
Joseph L. Koepfinger*
Thomas Koshy
Hung Ling
Dong Liu
Xiaohui Liu
Kevin Lu
Daleep Mohla
Andrew Myles
Paul Nikolich
Ronald C. Petersen
Annette D. Reilly
Robby Robson
Dorothy Stanley
Mehmet Ulema
Phil Wennblom
Philip Winston
Howard Wolfman
Jingyi Zhou

*Member Emeritus

Copyright © 2018 IEEE. All rights reserved.
Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.
Full document details: IEEE 187-2018

Introduction

This introduction is not part of IEEE Std 187-2018, IEEE Standard for Measurement of Emissions from FM and Television Broadcast Receivers in the Frequency Range of 9 kHz to 40 GHz.

This standard is a revision of IEEE Std 187-2003, IEEE Standard for Measurement Methods of Emissions from FM and Television Broadcast Receivers in the Frequency Range of 9 kHz to 40 GHz.

This standard is specifically written to outline the procedures for testing television (National Television System Committee [NTSC] and Advanced Television Systems Committee [ATSC]) broadcast receivers.

Copyright © 2018 IEEE. All rights reserved.
Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.
Documents
Document Sharing Hub
Full document details: IEEE 187-2018

Contents

1. Overview 9
   1.1 Scope 9
   1.2 General 9

2. Normative references 9

3. Definitions 10

4. Sources of spurious emissions 10

5. Modes of spurious emissions 10

6. Method of measurement—conducted emissions 11
   6.1 General 11
   6.2 Equipment requirements and setup details 11
   6.3 Measurement procedure 15

7. Method of measurement—radiated emissions 15
   7.1 General 15
   7.2 Equipment requirements and setup details 15
   7.3 Measurement procedure 20

8. Antenna radiation (local oscillator) 20

Annex A (informative) General TV test requirements 22

Annex B (informative) Optional TV antenna-cable input isolation transformer 23

Annex C (informative) Bibliography 25

Copyright © 2018 IEEE. All rights reserved.
Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.
Full document details: IEEE 187-2018

IEEE Standard for Measurement ~~Methods~~ of Emissions from FM and Television Broadcast Receivers in the Frequency Range of 9 kHz to 40 GHz

1. Overview

~~This standard is divided into three types of testing: Conducted Emissions (Clause 6), Radiated Emissions (Clause 7), and Antenna Radiation (Clause 8). The standard also includes two informative annexes entitled "General TV Test Requirements" and "Bibliography."~~

1.1 Scope

Spurious radiation from sound and television broadcast receivers ~~of the superheterodyne type~~ are possible sources of interference with other radio services.

This standard describes the potential sources of spurious radiation from receivers intended for the reception of sound and television broadcast, and the measurement methods for them.

1.2 General

This standard is divided into three types of testing: conducted emissions (Clause 6), radiated emissions (Clause 7), and antenna radiation (Clause 8). This standard also includes three informative annexes entitled "General TV test requirements," "Isolation transformer," and "Bibliography."

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

Documents
Document Sharing Hub

Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.

Full document details: IEEE 187-2018

ANSI C63.4~~-2001~~American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.1

ANSI C63.23, American National Standard Guide for Electromagnetic Compatibility—Computations and Treatment of Measurement Uncertainty.

BETS-7, Technical Standards and Requirements for Radio Apparatus Capable of Receiving Television Broadcasting.

CISPR 16-2-3, Specification for radio disturbance and immunity measuring apparatus and methods—Part 2–3: Methods of measurement of disturbances and immunity—Radiated disturbance measurements.[2]

CISPR 16-4-2, Specification for radio disturbance and immunity measuring apparatus and methods—Part4–2: Uncertainties, statistics and limit modeling—Measurement instrumentation uncertainty.

CISPR 32, Electromagnetic compatibility of multimedia equipment—Emission requirements.

Code of Federal Regulations (CFR) Title 47, Part 15[3]

ITU-R BT.471-1 (07/86), Nomenclature and description of color bar signals.[4]

~~3~~ [2]CISPR documents are available from the International Electrotechnical Commission~~, 3, rue de Varembé, Case Postale 131, CH 1211, Genève 20, Switzerland/Suisse (http://www.iec.ch/). They are also available in the United States from the Sales Department, American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036, USA~~ (http://www.iec.ch/) and the American National Standards Institute (http://www.ansi.org/).

[3] ~~2~~~~Code of Federal Regulations (CFR) documents~~ CFR publications are available from the U.S. Government Publishing Office ~~, 732 N. Capitol Street NW, Washington, DC 20401 (http://bookstore.gpo.gov/)~~ (http://www.ecfr.gov/).

[4]ITU-T publications are available from the International Telecommunications Union ~~, Place des Nations, CH 1211, Geneva 20, Switzerland/Suisse~~ (http://www.itu.int/).

Documents
Document Sharing Hub

Authorized licensed use limited to: Tsinghua University. Downloaded on February 25,2026 at 02:04:59 UTC from IEEE Xplore. Restrictions apply.

Full document details: IEEE 187-2018