ANSI/TIA-607-D-2019
APPROVED: JULY 29, 2019

TIA STANDARD

Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises

TIA-607-D
(Revision of TIA-607-C)

July 2019

TELECOMMUNICATIONS
INDUSTRY ASSOCIATION

tiaonline.org

NOTICE

TIA Engineering Standards and Publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for their particular need. The existence of such Standards and Publications shall not in any respect preclude any member or non-member of TIA from manufacturing or selling products not conforming to such Standards and Publications. Neither shall the existence of such Standards and Publications preclude their voluntary use by Non-TIA members, either domestically or internationally.

Standards and Publications are adopted by TIA in accordance with the American National Standards Institute (ANSI) patent policy. By such action, TIA does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the Standard or Publication.

This Standard does not purport to address all safety problems associated with its use or all applicable regulatory requirements. It is the responsibility of the user of this Standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before its use.

Any use of trademarks in this document are for information purposes and do not constitute an endorsement by TIA or this committee of the products or services of the company.

(From Project No. ANSI/TIA-PN-607-D, formulated under the cognizance of the TIA TR-42 Telecommunications Cabling Systems, TR-42.3 Subcommittee on Commercial Building Telecommunications Pathways and Spaces (569).

Published by
©TELECOMMUNICATIONS INDUSTRY ASSOCIATION
Standards and Technology Department
1320 N. Courthouse Road, Suite 200
Arlington, VA 22201 U.S.A.

PRICE: Please refer to current Catalog of
TIA TELECOMMUNICATIONS INDUSTRY ASSOCIATION STANDARDS AND ENGINEERING PUBLICATIONS
or call IHS, USA and Canada
(1-877-413-5187) International (303-397-2896)
or search online at http://www.tiaonline.org/standards/catalog/

NOTICE OF COPYRIGHT

This document is copyrighted by TIA.

Reproduction of these documents either in hard copy or soft copy (including posting on the web) is prohibited without copyright permission. For copyright permission to reproduce portions of this document, please contact the TIA Standards Department or go to the TIA website (www.tiaonline.org) for details on how to request permission. Details are located at:

http://www.tiaonline.org/standards/catalog/info.cfm#copyright

or

Telecommunications Industry Association
Technology & Standards Department
1320 N. Courthouse Road, Suite 200
Arlington, VA 22201 USA
+1.703.907.7700

Organizations may obtain permission to reproduce a limited number of copies by entering into a license agreement. For information, contact

IHS
15 Inverness Way East
Englewood, CO 80112-5704
or call
USA and Canada (1.800.525.7052)
International (303.790.0600)

NOTICE OF DISCLAIMER AND LIMITATION OF LIABILITY

The document to which this Notice is affixed (the "Document") has been prepared by one or more Engineering Committees or Formulating Groups of the Telecommunications Industry Association ("TIA"). TIA is not the author of the Document contents, but publishes and claims copyright to the Document pursuant to licenses and permission granted by the authors of the contents.

TIA Engineering Committees and Formulating Groups are expected to conduct their affairs in accordance with the TIA Procedures for American National Standards and TIA Engineering Committee Operating Procedures, the current and predecessor versions of which are available at http://www.tiaonline.org/standards/ec-procedures)/TIA's function is to administer the process, but not the content, of document preparation in accordance with the Manual and, when appropriate, the policies and procedures of the American National Standards Institute ("ANSI"). TIA does not evaluate, test, verify or investigate the information, accuracy, soundness, or credibility of the contents of the Document. In publishing the Document, TIA disclaims any undertaking to perform any duty owed to or for anyone.

If the Document is identified or marked as a project number (PN) document, or as a standards proposal (SP) document, persons or parties reading or in any way interested in the Document are cautioned that: (a) the Document is a proposal; (b) there is no assurance that the Document will be approved by any Committee of TIA or any other body in its present or any other form; (c) the Document may be amended, modified or changed in the standards development or any editing process.

The use or practice of contents of this Document may involve the use of intellectual property rights ("IPR"), including pending or issued patents, or copyrights, owned by one or more parties. TIA makes no search or investigation for IPR. When IPR consisting of patents and published pending patent applications are claimed and called to TIA's attention, a statement from the holder thereof is requested, all in accordance with the Manual. TIA takes no position with reference to, and disclaims any obligation to investigate or inquire into, the scope or validity of any claims of IPR. TIA will neither be a party to discussions of any licensing terms or conditions, which are instead left to the parties involved, nor will TIA opine or judge whether proposed licensing terms or conditions are reasonable or non-discriminatory. TIA does not warrant or represent that procedures or practices suggested or provided in the Manual have been complied with as respects the Document or its contents.

If the Document contains one or more Normative References to a document published by another organization ("other SSO") engaged in the formulation, development or publication of standards (whether designated as a standard, specification, recommendation or otherwise), whether such reference consists of mandatory, alternate or optional elements (as defined in the TIA Procedures for American National Standards) then (i) TIA disclaims any duty or obligation to search or investigate the records of any other SSO for IPR or letters of assurance relating to any such Normative Reference; (ii) TIA's policy of encouragement of voluntary disclosure (see TIA Procedures for American National Standards Annex C.1.2.3) of Essential Patent(s) and published pending patent applications shall apply; and (iii) Information as to claims of IPR in the records or publications of the other SSO shall not constitute identification to TIA of a claim of Essential Patent(s) or published pending patent applications.

TIA does not enforce or monitor compliance with the contents of the Document. TIA does not certify, inspect, test or otherwise investigate products, designs or services or any claims of compliance with the contents of the Document.

ALL WARRANTIES, EXPRESS OR IMPLIED, ARE DISCLAIMED, INCLUDING WITHOUT LIMITATION, ANY AND ALL WARRANTIES CONCERNING THE ACCURACY OF THE CONTENTS, ITS FITNESS OR APPROPRIATENESS FOR A PARTICULAR PURPOSE OR USE, ITS MERCHANTABILITY AND ITS NONINFRINGEMENT OF ANY THIRD PARTY'S INTELLECTUAL PROPERTY RIGHTS. TIA EXPRESSLY DISCLAIMS ANY AND ALL RESPONSIBILITIES FOR THE ACCURACY OF THE CONTENTS AND MAKES NO REPRESENTATIONS OR WARRANTIES REGARDING THE CONTENT'S COMPLIANCE WITH ANY APPLICABLE STATUTE, RULE OR REGULATION, OR THE SAFETY OR HEALTH EFFECTS OF THE CONTENTS OR ANY PRODUCT OR SERVICE REFERRED TO IN THE DOCUMENT OR PRODUCED OR RENDERED TO COMPLY WITH THE CONTENTS.

TIA SHALL NOT BE LIABLE FOR ANY AND ALL DAMAGES, DIRECT OR INDIRECT, ARISING FROM OR RELATING TO ANY USE OF THE CONTENTS CONTAINED HEREIN, INCLUDING WITHOUT LIMITATION ANY AND ALL INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF BUSINESS, LOSS OF PROFITS, LITIGATION, OR THE LIKE), WHETHER BASED UPON BREACH OF CONTRACT, BREACH OF WARRANTY, TORT (INCLUDING NEGLIGENCE), PRODUCT LIABILITY OR OTHERWISE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE FOREGOING NEGATION OF DAMAGES IS A FUNDAMENTAL ELEMENT OF THE USE OF THE CONTENTS HEREOF, AND THESE CONTENTS WOULD NOT BE PUBLISHED BY TIA WITHOUT SUCH LIMITATIONS.

Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises

Table of Contents

List of Figures

List of Tables

FOREWORD

(This foreword is not considered part of this Standard)

This Standard was developed by TIA Subcommittee TR-42.3.

Approval of this Standard

This Standard was approved by TIA Subcommittee TR-42.3, TIA Engineering Committee TR-42, and the American National Standards Institute (ANSI).

ANSI/TIA reviews standards every 5 years. At that time, standards are reaffirmed, withdrawn, or revised according to the submitted updates. Updates to be included in the next revision should be sent to the committee chair or to ANSI/TIA.

Contributing organizations

More than 60 organizations within the telecommunications industry (including manufacturers, consultants, end users, and other organizations) contributed their expertise to the development of this Standard.

Documents superseded

This Standard supersedes ANSI/TIA-607-C dated November, 2015, and its addendum.

Significant technical changes from the previous edition

Significant changes from the previous edition include:

- The contents of Addendum 1 (bonding in multi-tenant buildings) were incorporated.
- References were updated to conform with the 2019 edition of the *Telecommunications Industry Association (TIA) Standards Style Guide for Engineering Committees*.
- Definition of and requirements for secondary bonding conductor were added.

Annexes

There are seven annexes to this Standard. Annex A is normative and considered a part of this Standard. Annexes B through G are informative and not considered a part of this Standard.

Relationship to other TIA standards and documents

The following are related standards regarding various aspects of structured cabling that were developed and are maintained by Engineering Committee TIA TR-42. Figure 1 shows the schematic relationship between TIA telecommunications cabling standards.

- *Generic Telecommunications Cabling for Customer Premises* (ANSI/TIA-568.0)
- *Commercial Building Telecommunications Cabling Standard* (ANSI/TIA-568.1)
- *Balanced Twisted-Pair Telecommunications Cabling and Components Standard* (ANSI/TIA-568.2)
- *Optical Fiber Cabling and Components Standard* (ANSI/TIA-568.3)
- *Broadband Coaxial Cabling and Components Standard* (ANSI/TIA-568.4)
- *Telecommunications Pathways and Spaces* (ANSI/TIA-569)
- *Residential Telecommunications Infrastructure Standard* (ANSI/TIA-570)

- *Administration Standard for Telecommunications Infrastructure* (ANSI/TIA-606)
- *Customer-owned Outside Plant Telecommunications Infrastructure Standard* (ANSI/TIA-758)
- *Structured Cabling Infrastructure Standard for Intelligent Building Systems* (ANSI/TIA-862)
- *Telecommunications Infrastructure Standard for Data Centers* (ANSI/TIA-942)
- *Telecommunications Infrastructure Standard for Industrial Premises* (ANSI/TIA-1005)
- *Healthcare Facility Telecommunications Infrastructure Standard* (ANSI/TIA-1179)
- *Telecommunications Infrastructure Standard for Educational Facilities* (ANSI/TIA-4966)
- *Standard for Sustainable Information Communications Technology* (ANSI/TIA-4994)
- *Telecommunications Physical Network Security Standard* (ANSI/TIA-5017)
- *Automated Infrastructure Management (AIM) Systems- Requirements, Data Exchange and Applications* (ANSI/TIA-5048)

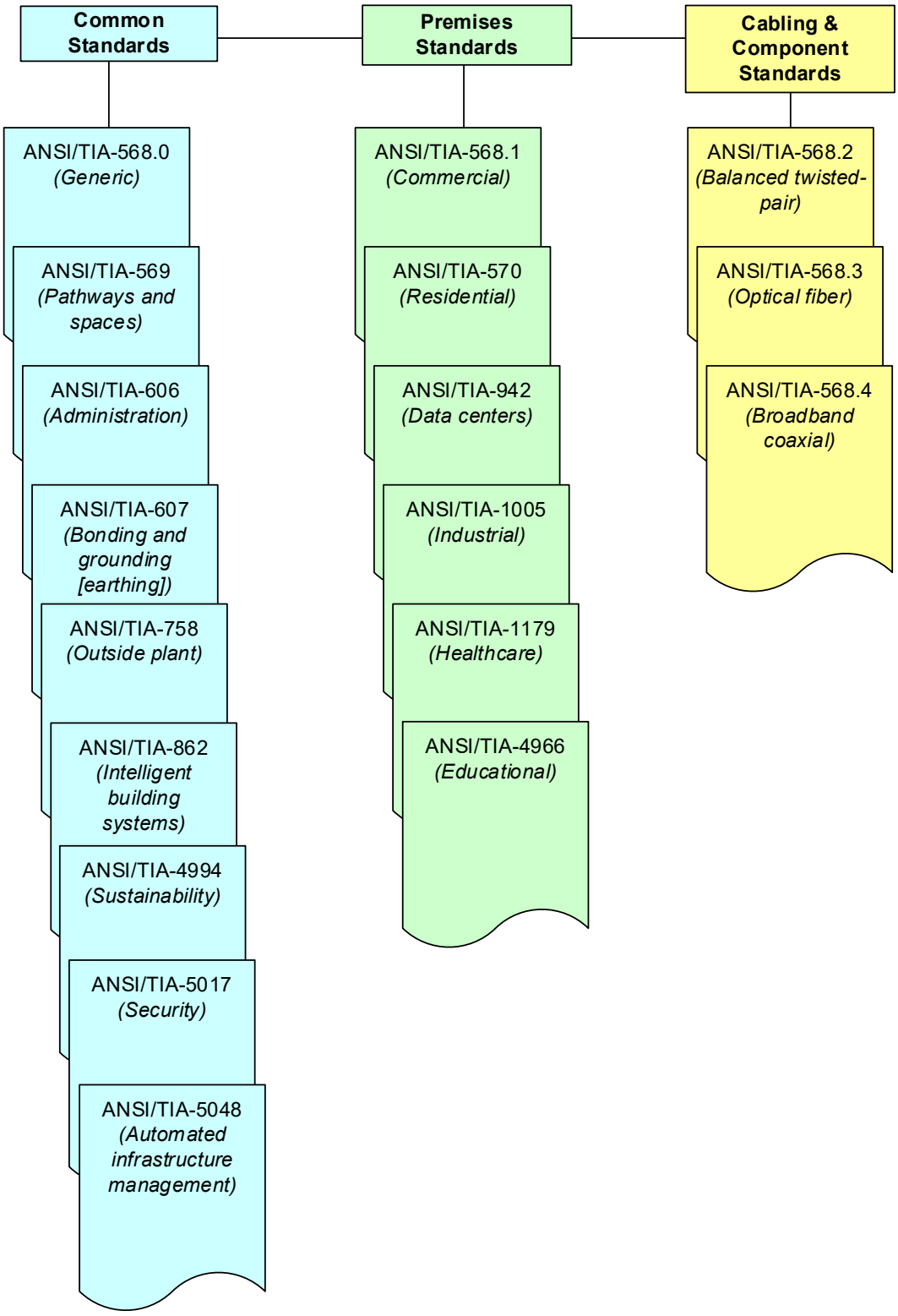

Figure 1 – Relationship between relevant TIA standards

Introduction

Telecommunications, as used in this Standard, refers to the transmission of all forms of information (e.g., voice, data, video, security, audio, industrial, building control, remote power delivery). Telecommunications equipment used to support these wide varieties of systems that rely on the electronic transport of information require an effective building infrastructure. This infrastructure encompasses spaces, pathways, cables, connecting hardware, and a bonding and grounding system. For reliable operation of any telecommunications equipment or system, bonding and grounding (earthing) is essential – regardless of the cabling technology or media. This Standard focuses on the bonding and grounding portion of this infrastructure.

> **NOTE –** The North American term "grounding" that is used in this Standard is equivalent to the international term "earthing."

The bonding and grounding approach in this Standard is intended to work in concert with premises cabling, equipment, spaces and pathways specified within the TIA Engineering Committee TR-42. The requirements specified in this Standard in conjunction with a basic understanding of bonding and grounding concepts and methodologies will aid in achieving a reliable solution when applied to telecommunications installations.

Several sources of bonding and grounding information exist within the telecommunications industry. For example, the *NEC*® specifies requirements regarding the safety aspects of bonding and grounding of equipment and systems. Yet another example is that of ATIS 0600318, *Electrical Protection Applied to Telecommunications Network Plant at Entrances to Customer Structures or Buildings,* which provides information on bonding and grounding to support electrical protection considerations.

Purpose

The purpose of this Standard is to enable and encourage the planning, design, and installation of generic telecommunications bonding and grounding systems within premises with or without prior knowledge of the telecommunications systems that will subsequently be installed. While primarily intended to provide direction for the design of new buildings, this Standard may be used for existing building renovations or retrofit treatment. Design requirements and choices are provided to enable the designer to make informed design decisions.

Stewardship

Telecommunications infrastructure affects raw material consumption. The infrastructure design and installation methods also influence product life and sustainability of electronic equipment life cycling. These aspects of telecommunications infrastructure impact our environment. Since building life cycles are typically planned for decades, technological electronic equipment upgrades are necessary. The telecommunications infrastructure design and installation process magnifies the need for sustainable infrastructures with respect to building life, electronic equipment life cycling and considerations of effects on environmental waste. Telecommunications designers are encouraged to research local building practices for a sustainable environment and conservation of fossil fuels as part of the design process. See TIA TSB-5046 for sustainable processes for manufacturers and ANSI/TIA-4994 for planning sustainable information communications technology systems.

Specification of criteria

Two categories of criteria are specified; mandatory and advisory. The mandatory requirements are designated by the word "shall;" advisory requirements are designated by the words "should," "may," or "desirable," which are used interchangeably in this Standard.

Mandatory criteria generally apply to protection, performance, administration and compatibility; they specify the minimally-compliant requirements. Advisory or desirable criteria are presented when their attainment will enhance the general performance of the cabling system in all its contemplated applications.

A note in the text, table, or figure is used for emphasis or offering informative suggestions, or providing additional information.

Metric equivalents of United States customary units

The dimensions in this Standard are metric or United States customary with approximate conversions to the other.

Life of this Standard

This Standard is a living document. The criteria contained in this Standard are subject to revisions and updating as warranted by advances in building construction techniques and telecommunications technology.

1 SCOPE

This Standard specifies requirements for a generic telecommunications bonding and grounding infrastructure and its interconnection to electrical systems and telecommunications systems. This Standard may also be used as a guide for the renovation or retrofit of existing systems.

2 NORMATIVE REFERENCES

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. ANSI and TIA maintain registers of currently valid national standards published by them.

- ANSI/TIA-606, *Administration Standard for Telecommunications Infrastructure*
- ATIS 0600321, *Electrical Protection for Network Operator-Type Equipment Positions*
- ATIS 0600334, *Electrical Protection of Communications Towers And Associated Structures*
- IEEE C2, *National Electrical Safety Code® (NESC®)*
- NFPA 70, *National Electrical Code® (NEC®)*
- NFPA 780, *Standard for the Installation of Lightning Protection Systems*

ANSI/TIA-607-D-1-2021
APPROVED: JULY 8, 2021

TIA STANDARD

Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises, Addendum 1: Harmonization with ANSI/TIA-222

ANSI/TIA-607-D-1
(Addendum to TIA-607-D)

July 2021

NOTICE

TIA Engineering Standards and Publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for their particular need. The existence of such Standards and Publications shall not in any respect preclude any member or non-member of TIA from manufacturing or selling products not conforming to such Standards and Publications. Neither shall the existence of such Standards and Publications preclude their voluntary use by Non-TIA members, either domestically or internationally.

Standards and Publications are adopted by TIA in accordance with the American National Standards Institute (ANSI) patent policy. By such action, TIA does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the Standard or Publication.

This Standard does not purport to address all safety problems associated with its use or all applicable regulatory requirements. It is the responsibility of the user of this Standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before its use.

Any use of trademarks in this document are for information purposes and do not constitute an endorsement by TIA or this committee of the products or services of the company.

(From Standards Proposal No. ANSI/TIA-PN-607-D-1, formulated under the cognizance of the TIA TR-42 Telecommunications Cabling Systems, TR-42.3 Subcommittee on Commercial Building Telecommunications Pathways and Spaces).

Published by
©TELECOMMUNICATIONS INDUSTRY ASSOCIATION
Technology and Standards Department
1310 N. Courthouse Road, Suite 890
Arlington, VA 22201 U.S.A.

PRICE: Please refer to current Catalog of
TIA TELECOMMUNICATIONS INDUSTRY ASSOCIATION STANDARDS
AND ENGINEERING PUBLICATIONS
or call IHS, USA and Canada
(1-800-854-7179) International (303-397-2896)
or search online at www.TIAonline.org

NOTICE OF COPYRIGHT

NOTICE OF DISCLAIMER AND LIMITATION OF LIABILITY

The document to which this Notice is affixed (the "Document") has been prepared by one or more Engineering Committees or Formulating Groups of the Telecommunications Industry Association ("TIA"). TIA is not the author of the Document contents, but publishes and claims copyright to the Document pursuant to licenses and permission granted by the authors of the contents.

TIA Engineering Committees and Formulating Groups are expected to conduct their affairs in accordance with the TIA Procedures for American National Standards and TIA Engineering Committee Operating Procedures, the current and predecessor versions of which are available at Standards Procedures and Guidelines. TIA's function is to administer the process, but not the content, of document preparation in accordance with the Manual and, when appropriate, the policies and procedures of the American National Standards Institute ("ANSI"). TIA does not evaluate, test, verify or investigate the information, accuracy, soundness, or credibility of the contents of the Document. In publishing the Document, TIA disclaims any undertaking to perform any duty owed to or for anyone.

If the Document is identified or marked as a project number (PN) document, or as a standards proposal (SP) document, persons or parties reading or in any way interested in the Document are cautioned that: (a) the Document is a proposal; (b) there is no assurance that the Document will be approved by any Committee of TIA or any other body in its present or any other form; (c) the Document may be amended, modified or changed in the standards development or any editing process.

The use or practice of contents of this Document may involve the use of intellectual property rights ("IPR"), including pending or issued patents, or copyrights, owned by one or more parties. TIA makes no search or investigation for IPR. When IPR consisting of patents and published pending patent applications are claimed and called to TIA's attention, a statement from the holder thereof is requested, all in accordance with the Manual. TIA takes no position with reference to, and disclaims any obligation to investigate or inquire into, the scope or validity of any claims of IPR. TIA will neither be a party to discussions of any licensing terms or conditions, which are instead left to the parties involved, nor will TIA opine or judge whether proposed licensing terms or conditions are reasonable or non-discriminatory. TIA does not warrant or represent that procedures or practices suggested or provided in the Manual have been complied with as respects the Document or its contents.

If the Document contains one or more Normative References to a document published by another organization ("other SSO") engaged in the formulation, development or publication of standards (whether designated as a standard, specification, recommendation or otherwise), whether such reference consists of mandatory, alternate or optional elements (as defined in the TIA Procedures for American National Standards) then (i) TIA disclaims any duty or obligation to search or investigate the records of any other SSO for IPR or letters of assurance relating to any such Normative Reference; (ii) TIA's policy of encouragement of voluntary disclosure (see TIA Procedures for American National Standards Annex C.1.2.3) of Essential Patent(s) and published pending patent applications shall apply; and (iii) Information as to claims of IPR in the records or publications of the other SSO shall not constitute identification to TIA of a claim of Essential Patent(s) or published pending patent applications.

TIA does not enforce or monitor compliance with the contents of the Document. TIA does not certify, inspect, test or otherwise investigate products, designs or services or any claims of compliance with the contents of the Document.

ALL WARRANTIES, EXPRESS OR IMPLIED, ARE DISCLAIMED, INCLUDING WITHOUT LIMITATION, ANY AND ALL WARRANTIES CONCERNING THE ACCURACY OF THE CONTENTS, ITS FITNESS OR APPROPRIATENESS FOR A PARTICULAR PURPOSE OR USE, ITS MERCHANTABILITY AND ITS NONINFRINGEMENT OF ANY THIRD PARTY'S INTELLECTUAL PROPERTY RIGHTS. TIA EXPRESSLY DISCLAIMS ANY AND ALL RESPONSIBILITIES FOR THE ACCURACY OF THE CONTENTS AND MAKES NO REPRESENTATIONS OR WARRANTIES REGARDING THE CONTENT'S COMPLIANCE WITH ANY APPLICABLE STATUTE, RULE OR REGULATION, OR THE SAFETY OR HEALTH EFFECTS OF THE CONTENTS OR ANY PRODUCT OR SERVICE REFERRED TO IN THE DOCUMENT OR PRODUCED OR RENDERED TO COMPLY WITH THE CONTENTS. TIA SHALL NOT BE LIABLE FOR ANY AND ALL DAMAGES, DIRECT OR INDIRECT, ARISING FROM OR RELATING TO ANY USE OF THE CONTENTS CONTAINED HEREIN, INCLUDING WITHOUT LIMITATION ANY AND ALL INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF BUSINESS, LOSS OF PROFITS, LITIGATION, OR THE LIKE), WHETHER BASED UPON BREACH OF CONTRACT, BREACH OF WARRANTY, TORT (INCLUDING NEGLIGENCE), PRODUCT LIABILITY OR OTHERWISE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE FOREGOING NEGATION OF DAMAGES IS A FUNDAMENTAL ELEMENT OF THE USE OF THE CONTENTS HEREOF, AND THESE CONTENTS WOULD NOT BE PUBLISHED BY TIA WITHOUT SUCH LIMITATIONS.

Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises
Addendum 1: Harmonization with ANSI/TIA-222

Table of Contents

Table of Figures