

TIA-968-A-1

Addendum

**Telecommunications - Telephone Terminal Equipment -
Technical Requirements for Connection of
Terminal Equipment to the Telephone Network**

May 6, 2003

Formulated under the cognizance of TIA Subcommittee TR-41.9
Technical Regulatory Requirements

With the approval of TIA Engineering Committee TR-41
User Premises Telecommunications Requirements

FOREWORD

(This foreword is not part of this Standard.)

The Federal Communications Commission (FCC), in its Report & Order, FCC 00-400, on CC Docket No. 99-216, mandated creation of the Administrative Council for Terminal Attachments (ACTA). In 47 CFR 68.7(b) ACTA was charged to adopt and publish technical criteria to prevent harms to the telephone network submitted to it by standards development organizations accredited by the American National Standards Institute (ANSI). This document was created for submission to ACTA in accordance with 47 CFR 68.604. The latest requirements adopted by ACTA may be found at www.part68.org.

This document is an addendum to TIA-968-A, *Telecommunications – Telephone Terminal Equipment – Technical Requirements for Connection of Terminal Equipment to the Telephone Network*. This addendum makes the following changes to TIA-968-A:

- The encoded analog content signal power limitations and the 2-wire and 4-wire lossless tie trunk signal power limitations are relaxed and these changes have been coordinated with changes to the allowable net amplification between port requirements in Table 4.6. The result is less allowable net amplification between some ports and more allowable net amplification between other ports. A sunset date is established for the existing criteria in 4.5.2.1.2, 4.5.10, and Table 4.6 of TIA-968-A.
- New text for Annex A of TIA-968-A has been provided in order to clarify the status of grandfathered non-approved terminal equipment.
- Errata for TIA-968-A is also included.

This addendum was produced by Working Group TR-41.9.1 of Subcommittee TR-41.9, Technical Regulatory Considerations. It was developed in accordance with ANSI and TIA/EIA procedural guidelines and represents the consensus position of the Working Group and its parent Subcommittee, which served as the formulating group. It has also received the concurrence of Engineering Committee TR-41, User Premises Telecommunications Requirements. Committee approval of this standard does not necessarily imply that all members voted for its approval.

Working Group TR-41.9.1 acknowledges the contribution made by the following individuals in the development of this version of this Standard.

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1 INTRODUCTION

Section 3 of this addendum relaxes certain signal power limitations by providing replacement text. These changes have been coordinated with changes to the allowable net amplification between port requirements in Table 4.6. The result is less allowable net amplification between some ports and more allowable net amplification between other ports. The clause numbering in section 3 of this document aligns with the original clause numbers in TIA-968-A.

Section 4 of this addendum clarifies the status of grandfathered non-approved terminal equipment by providing replacement text for Annex A

Section 5 of this addendum provides errata throughout TIA-968-A.

2 SCOPE

This addendum only provides changes to TIA/TSB-968-A, "Telecommunications - Telephone Terminal Equipment - Technical Requirements for Connection of Terminal Equipment to the Telephone Network"

The criteria in this addendum may be applied to terminal equipment approved after publication of this addendum (TIA-968-A-1) by the ACTA.

The sunset date for the criteria in 4.5.2.1.2, 4.5.10, and Table 4.6 of TIA-968-A shall be 18 months after the publication of this addendum by the ACTA.

During the interval between the publication of this addendum by the ACTA and July 15, 2004, (i.e., the sunset date for TIA/EIA/IS-968 and TIA/EIA/IS-883) newly approved terminal equipment or previously approved terminal equipment that is modified shall be approved using the following technical criteria at the discretion of the Responsible Party:

- a) T1.TRQ.6, TIA/EIA/IS-968 and TIA/EIA/IS-883; or,
- b) T1.TRQ.6 and TIA-968-A; or,
- c) T1.TRQ.6 and TIA-968-A as modified by TIA-968-A-1.

During the interval between July 15, 2004, and the sunset date for the criteria in 4.5.2.1.2, 4.5.10, and Table 4.6 of TIA-968-A, newly approved terminal equipment or previously approved terminal equipment that is modified may be approved using either of the following technical criteria at the discretion of the Responsible Party:

- a) T1.TRQ.6 and TIA-968-A; or,
- b) T1.TRQ.6 and TIA-968-A as modified by TIA-968-A-1.

After the sunset date for the criteria in 4.5.2.1.2, 4.5.10, and Table 4.6 of TIA-968-A, new terminal equipment and previously approved terminal equipment that is modified shall be approved using the criteria in TIA-968-A as modified by TIA-968-A-1.

3 CLAUSE REVISIONS

4.5.2 Voiceband metallic signal power

Replace clause 4.5.2.1.2 with the following:

4.5.2.1.2 For 2-wire and 4-wire lossless tie trunk type interfaces, the maximum power of other than live voice signals delivered to a 600 ohm termination shall not exceed -11 dBm when averaged over any 3-second interval.

Replace Table 4.6 with the following (the notes in TIA-968-A for Table 4.6 are still applicable):

Table 4.6 Allowable Net Amplification Between Ports (See notes 1, 3, 4, 5, 6 and 7)

To	Tie Trunk Type Ports			Integrated Services Trunk Ports	Off Premises Station Ports (2-wire)	Analog Public Switched Network Ports (2-wire)	Sub-rate 1.544 Mbps Digital PBX-CO Trunk Ports (4-wire)
From (see note 5)	Lossless (2/4 wire)	Sub-rate 1.544 Mbps Satellite (4-wire)	Sub-rate 1.544 Mbps Tandem (4-wire)				
Lossless Tie Trunk Port (2/4 wire)	0 dB	2 dB	2 dB	2 dB	2 dB		
Sub-rate 1.544 Mbps Satellite Tie Trunk Port (4-wire)	1 dB		3 dB	3 dB	3 dB		
Sub-rate 1.544 Mbps Tandem Tie Trunk Port (4-wire)	-2 dB	0 dB	0 dB	0 dB	0 dB		
Integrated Services Trunk Ports	-2 dB	0 dB	0 dB	0 dB	0 dB		
Approved Digital TE	-2 dB	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
On Premises Station Port with Approved TE (see note 2)	-2 dB	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
Off Premises Station Port (2-wire)	2 dB	4 dB	4 dB	4 dB	4 dB	4 dB	4 dB
Analog Public Switched Network Ports (2-wire)					3 dB	3 dB	
Sub-rate 1.544 Mbps Digital PBX-CO Trunk Ports (4-wire)					0 dB		

4.5.2 Encoded Analog Content Limits

Replace clause 4.5.10 with the following:

If approved terminal equipment contains an analog-to-digital converter or generates a data bit stream that is intended for eventual conversion into voiceband analog signals in the PSTN, the encoded analog content of the digital signal shall be limited as specified in this clause.

The maximum equivalent power of encoded analog content derived by a zero level decoder test configuration shall not exceed the following limits when averaged over any 3-second time interval:

- -9 dBm for all signals other than live voice, V.90 or V.92 modems, or network control signals.
- -6 dBm for V.90 or V.92 modems.
- -3 dBm for network control signals.

The zero level decoder test configuration is intended to simplify measurement of the maximum encoded analog signal. The use of a zero level encoder for test purposes shall not be interpreted as permission to exceed the encoded analog content limits given above when analog or digital loss is inserted in the PSTN connection by wireline carriers.

4 Annex A

Replace Annex A with the following:

Annex A (Normative)

Grandfathered Non-Approved Terminal Equipment (normative)

A.1 Introduction

The grandfather provisions in this Annex were originally contained in Part 68 of the FCC Rules. These grandfather provisions provide an alternative whereby certain non-approved TE can be directly connected to wireline carrier networks during a limited transition period. Clauses A.2 through A.11 provide the grandfather conditions for various types of TE.

In each of the grandfather clauses below, two different dates are given. The date in item (a) of each clause is the *grandfather eligibility date*. The *approval-only date* is given in item (b) of each clause. Non-approved TE is grandfathered if it was directly connected to a wireline carrier network as of the *grandfather eligibility date*. Any TE identical to a grandfathered device is also eligible for grandfathering if it was directly connected prior to the *approval-only date*. TE cannot be grandfathered after the *approval-only date*.

Non-approved grandfathered TE may remain connected for life, without approval, unless subsequently modified. In this Annex, the phrase "*may remain connected for life*" means that grandfathered TE may remain connected, or be moved or reconnected at the same or different premises, for the life of the equipment. In this Annex, the phrase "*unless subsequently modified*" is not intended to limit routine repairs that restore TE to the same functional operation and specifications it had prior to the failure that resulted in the repair operation. Instead, the phrase "*unless subsequently modified*" is intended to cause grandfathered status to be lost if:

- Components are replaced during a repair operation with components that are not comparable to the original ones;
- Changes are made to the equipment that affect the Part 68 and TIA-968-related characteristics of that equipment at the network interface or compliance with technical criteria in this standard or 47 CFR Part 68 rules;
- Modifications significantly change the function(s) of the original equipment.

In this Annex, the term "*directly connected*" refers to any direct electrical connection, either by a telephone company or by a customer, made in accordance with the telephone companies' tariffs and without a protective connecting arrangement. Thus TE that is directly connected, within the meaning of this Annex, includes all TE supplied by telephone companies (including "connecting arrangements and data access arrangements") as well as the following types of customer-provided equipment:

- Attested operators' headsets and conferencing devices
- Conformed telephone answering devices
- Equipment connected by many "special" entities, e.g. gas, oil, electric, transportation companies, selected industrial firms, the Department of Defense, the National Aeronautics and Space Administration, and customers in "hazardous or inaccessible locations."

In this Annex, the term "*of a type*" generally means the same model of equipment made by the same manufacturer and is intended to mean equipment of the same mechanical and electrical design.

Non-approved, non-grandfathered equipment may only be directly connected to the network through the use of approved or grandfathered protective circuitry.

A.2 Grandfathered terminal equipment (other than PBX and key telephone systems) and protective circuitry.

- a) All terminal equipment (other than PBX and key telephone systems) and protective circuitry of a type directly connected to the public switched telephone network and services identified in 1.1(b) as of October 17, 1977, may remain connected for life, without approval, unless subsequently modified.
- b) New installations of terminal equipments (other than PBX and key telephone systems) and protective circuitry (if any) may be performed up to July 1, 1979, without approval of any terminal equipment involved, provided that these terminal equipments are of a type directly connected to of a type directly connected to the public switched telephone network and services identified in 1.1(b) as of October 17, 1977. These terminal equipments may remain connected for life, without approval, unless subsequently modified.

A.3 Grandfathered systems (including, but not limited to, PBX and key telephone systems).

- a) Entire systems, including their equipment, premises wiring, and protective apparatus (if any) directly connected to the public switched telephone network and services identified in 1.1(b) on June 1, 1978, may remain connected for life without approval, unless subsequently modified, except for modifications allowed under A.3(c).
- b) New installations of equipments may be performed (including additions to existing systems) up to January 1, 1980, without approval of any equipments involved, provided that these equipments are of a type directly connected to the public switched telephone network or services identified in 1.1(b) as of June 1, 1978. These equipments may remain connected for life without approval, unless subsequently modified, except for modifications allowed under A.3(c).
- c) Modifications to systems and installations involving unapproved equipment:
 - 1) Use of other than fully-protected premises wiring is a modification under 1.1. As an exception to the general requirement that no modification is permitted to unapproved equipment whose use is permitted under 1.1, certain modifications are authorized here-in.
 - 2) Other than fully-protected premises wiring may be used if it is qualified in accordance with the procedures and requirements of § 68.215. Since there is no "responsible party" of unapproved equipment, the training and authority required by § 68.215(c) will have to be received from the equipment's manufacturer.
 - 3) Existing separate, identifiable and discrete protective apparatus

may be removed, or replaced with apparatus of lesser protective function, provided that any premises wiring to which the public switched telephone network or service identified in 1.1 is thereby exposed conforms to A.3(c)(2) above. Minor modifications to existing unapproved equipments are authorized to facilitate installation or premises wiring, so long as they are performed under the responsible supervision and control of a person who complies with § 68.215(c). Since there is no “responsible party” of unapproved equipment, the training and authority required by § 68.215(c) will have to be received from the manufacturer of the equipment so modified.

A.4 Grandfathered private branch exchange (or similar) systems for connection to private line type services (tie trunk type services, off-premises station lines, automatic identified outward dialing, and message registration):

- a) PBX (or similar) systems, including their equipments, premises wiring, and protective apparatus (if any) directly connected to a private line type service on April 30, 1980 may remain connected for life without approval unless subsequently modified, except for modifications allowed under A.4(c).
- b) New installations of equipments may be performed (including additions to existing systems) up to May 1, 1983 without approval of any equipments involved, provided that these equipments are of a type directly connected to a private line type service as of April 30, 1980. These equipments may remain connected for life without approval, unless subsequently modified, except for modifications allowed under A.4(c).
- c) Modifications to systems and installations involving unapproved equipment:
 - 1) Use of other than fully-protected premises wiring is a modification under 1.1. As an exception to the general requirement that no modification is permitted to unapproved equipment whose use is permitted under 1.1, certain modifications are authorized herein.
 - 2) Other than fully-protected premises wiring may be used if it is qualified in accordance with the procedures and requirements of § 68.215. Since there is no “responsible party” of unapproved equipment, the training and authority required by § 68.215(c) will have to be received from the equipment’s manufacturer.
 - 3) Existing separate, identifiable and discrete protective apparatus may be removed, or replaced with apparatus of lesser protective function, provided that any premises wiring to which the private line type service is thereby exposed conforms to A.4(c)(2) above. Minor modifications to existing unapproved equipments are authorized to facilitate installation or premises wiring, so long as they are performed under the responsible supervision and control of a person who complies with § 68.215(c). Since there is no “responsible party” of unapproved equipment, the training and authority required by § 68.215(c) will have to be received from the manufacturer of the equipment so modified.
- d) PBX (or similar) systems connected with automatic identified outward

dialing or message registered private line services of a type that complies with paragraphs A.4(3)(a) and A.4.(3)(b) of this section may remain connected for life, without approval, unless subsequently modified.

A.5 Grandfathered terminal equipment for connection to local area data channels.

- a) All terminal equipment of a type directly connected to Local Area Data Channels or directly connected under special assembly tariff provisions to telephone company-supplied, non-loaded, metallic, greater-than-voiceband circuits for the purpose of providing limited distance data transmission as of February 10, 1986, may remain connected for life, without approval, unless subsequently modified.
- b) New installations of terminal equipment may be performed up to August 10, 1987 without approval of any terminal equipment involved, provided that these terminal equipments are of a type directly connected to Local Area Data Channels or directly connected under special assembly tariff provisions to telephone company-supplied, non-loaded, metallic, greater-than-voiceband circuits for the purpose of providing limited distance data transmission as of February 10, 1986. These terminal equipments may remain connected for life, without approval, unless subsequently modified.

A.6 Grandfathered terminal equipment for connection to subrate and 1.544 Mbps digital services.

- a) Terminal equipment including premises wiring and protective apparatus (if any) directly connected to subrate or to 1.544 Mbps digital services on January 2, 1986, may remain connected for life, without approval, unless subsequently modified.
- b) New installations of terminal equipments, including premises wiring and protective apparatus (if any) may be installed including additions to existing systems) up to June 30, 1987, without approval of any terminal equipment involved, provided that these terminal equipments are of a type directly connected to subrate or 1.544 Mbps digital services as of January 2, 1986. These terminal equipments may remain connected for life, without approval, unless subsequently modified.

A.7 Grandfathered test equipment.

- a) Test equipment directly connected to the telephone network on February 10, 1986, is considered to be grandfathered and may remain connected for life, without approval, unless subsequently modified.
- b) New installations of test equipment may be performed up to August 10, 1987 without approval, provided that the test equipment is of a type directly connected to the public switched network or services identified in 1.1(a), (b), (c), (d), (e), and (f). This test equipment may remain connected for life, without approval, unless subsequently modified.

A.8 Grandfathered terminal equipment or systems for connection to voiceband private line channels for 2-point and multipoint private line services that utilize loop start, ringdown, or inband signaling; or voiceband metallic channels.

- a) Terminal equipment or systems, including premises wiring and protective apparatus (if any), directly connected to voiceband private lines for 2-

point or multipoint service on February 10, 1986, may remain connected for life without approval unless subsequently modified, except for modifications allowed under A.8(c).

- b) New installations of equipments may be installed (including additions to existing systems) up to August 10, 1987 without approval of any equipments involved, provided that these equipments are of a type directly connected to voiceband private lines for 2-point or multipoint services. These equipments may remain connected for life, without approval, unless subsequently modified, except for modifications allowed under A.8(c).
- c) Modification to systems and installations involving unapproved equipment:
 - i. Use of other than fully-protected premises wiring is a modification under 1.1. As an exception to the general requirements that no modification is permitted to unapproved equipment whose use is permitted under 1.1, certain modifications are authorized here-in.
 - ii. Other than fully-protected premises wiring may be used if it is qualified in accordance with procedures and requirements of § 68.215. Since there is no “responsible party” of unapproved equipment, the training and authority required by § 68.215(c) will have to be received from the equipment’s manufacturer.
 - iii. Existing separate, identifiable, and discrete protective apparatus may be removed or replaced with apparatus of lesser protective function, provided that any premises wiring to which the private line service is thereby exposed conforms to A.8(c)(2) of this section. Minor modifications to existing unapproved equipments are authorized to facilitate installation of premises wiring, so long as they are performed under the responsible supervision and control of a person who complies with § 68.215(c). Since there is no “responsible party” of unapproved equipment, the training and authority required by §68.215(c) will have to be received from the manufacturer of the equipment so modified.

A.9 Terminal equipment, including its premises wiring directly connected to PSDS (Type I, II or III)

- a) Terminal equipment, including its premises wiring directly connected to PSDS (Type I, II or III) on or before November 13, 1996, may remain connected for life without approval, unless subsequently modified.
- b) New installation of terminal equipment, including its premises wiring, may occur until May 13, 1998, without approval of any terminal equipment involved, provided that the terminal equipment is of a type directly connected to PSDS (Type I, II or III) as of November 13, 1996. This

terminal equipment may remain connected for life, without approval, unless subsequently modified.

A.10 Terminal equipment, including premises wiring directly connected to ISDN BRA or PRA

- a) Terminal equipment, including premises wiring directly connected to ISDN BRA or PRA on November 13, 1996, may remain connected for life without approval, unless subsequently modified.
- b) New installation of terminal equipment, including premises wiring, may occur until May 13, 1998, without approval of any terminal equipment involved, provided that the terminal equipment is of a type directly connected to ISDN BRA or PRA as of November 13, 1996. This terminal equipment may remain connected for life, without approval, unless subsequently modified.

A.11 Grandfathered central office implemented payphone equipment.

- a) Terminal equipment, including its premises wiring, that is directly connected to a central-office-implemented telephone line on or before October 8, 1997, may remain connected for life, without approval, unless subsequently modified.
- b) New installation of terminal equipment, including its premises wiring, may occur until April 8, 1999, without approval of any central-office-implemented telephone line equipment involved, provided that the terminal equipment is of a type directly connected to a central-office-implemented telephone line as of October 8, 1997. This terminal equipment may remain connected for life, without approval, unless subsequently modified.

5 ERRATA

Make the following changes:

- a- In item (g) of 1.1, change the reference from 1.3.56 to 1.3.51.
- b- In the last sentence of the first paragraph of 1.2, change Annex B to Annex E.
- c- In the note associated with the first sentence of 1.3, change the reference from Annex B to Annexes C and D.
- d- In 1.3.35, change the reference from 4.4.4.4 to 4.4.3.
- e- In the last sentence of 4.2.2.3, change the reference from 4.5.5.2 to 4.5.6.3.
- f- In 4.5.2.4, change the three references from "4.5.2.1, 4.5.2.1.2, and 4.5.2.1.3" to "4.5.2.4.1, 4.5.2.4.2, and 4.5.2.4.3."
- g- In 4.7.4.1, change the reference from 4.7.2.1.3 to 4.7.2.4.
- h- In the last sentence of 4.7.8, change the reference from 1.3.26 to 1.3.27.