



ATT -TP-76200
NETWORK EQUIPMENT POWER, GROUNDING,
ENVIRONMENTAL, AND PHYSICAL DESIGN
REQUIREMENTS

To: Telecommunications Equipment Suppliers

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GENERAL

1.1. Requirements and Objectives

This section provides the requirements and objectives for the power, grounding, environmental, and physical design of telecommunications equipment intended for use in network facilities, including outside plant and customer's premises. The appendices included in this section discuss AT&T's product evaluation process and identify the type of product information required from product suppliers for the product evaluation process.

1.2. Purpose

The purpose of this section is to provide product suppliers with a comprehensive reference of equipment requirements and objectives for the subjects covered. A product's compliance with the requirements and objectives of this section will not be the sole basis for the acceptance of the product, however noncompliance with one or more of the requirements or objectives of this section may be the basis for a product's denial of purchase.

1.3. Scope

Unless otherwise stated, the requirements contained herein apply to equipment systems and assemblies intended for installation in all AT&T Local Exchange Carrier affiliates, Internet Services, and Advanced Services, Inc. network equipment buildings, equipment areas within buildings, electronic equipment enclosures such as controlled environmental vaults, outside electronic equipment cabinets, and customer locations.

Note: AT&T currently has two "NEBS" standards documents:

- ATT-TP-76200 is used by AT&T LEC, ASI and Internet Services
- AT&T "NEDS" is used by AT&T Corporation

Equipment testing and conformance to ATT-TP-76200 or the [TCG checklist](#) will be accepted as conformance to the "NEBS" requirements in "NEDS". However, NEDS contains additional requirements and should be reviewed by companies wishing to sell products to AT&T Corporation. A copy of the NEDS standard may be requested by contacting:

Karen Fox
440 Hamilton Ave.
White Plains, NY, 10601
Phone: (914) 397-6112
e-mail: kf2867@att.com

1.4. Definitions

- A. The term **product supplier** as used throughout this section refers to the equipment manufacturer or agent of the equipment manufacturer, whichever is appropriate for the product being considered.
- B. The term **company representative** as used throughout this section refers to the AT&T employee representing AT&T
- C. Requirements are those product features that **must** be provided by the equipment manufacturer. The words "shall" and "must" are used throughout this section to identify requirements.
- D. Objectives are product features that are **desired** for the long term use or application. The word "should" is used throughout this section to identify objectives.

1.5. ATT-TP-76200 Internet Web Site

Copies of this document and general information about AT&T's environmental equipment standards may be found at <https://ebiznet.sbc.com/sbcnebs/>.

1.6. Product Evaluation Process

AT&T Services' Product Evaluation Process is documented in Appendix A.

NOTE: Unless the AT&T Fast Track process is used (see Appendix A), for requirements that call or testing to verify conformance, test reports **must** be forwarded to AT&T for review before the product will be approved for use.

1.7. Requirement Levels

Equipment must demonstrate conformance to subsets of requirements contained in ATT-TP-76200 depending on the intended application and deployment location(s) of the equipment. Specific requirements for each level and location are identified in the corresponding Equipment Supplier Response (ESR) matrix forms located in Section 12 and identified in Table 1-1. See Appendix A for processes required to document conformance to requirements.

- A. **LEVEL ONE (ESR-001).** Level One refers to a subset of ATT-TP-76200 requirements that form the minimum acceptable safety requirements necessary to protect personnel and the network. Level One is applicable for Collocator's equipment and may be applicable for AT&T equipment that does carry customer traffic (e.g. monitoring and test equipment). This level should only be used if it is specified in this document or directed by AT&T representative.

- B. **LEVEL TWO (ESR-002).** Level Two refers to safety and modified reliability requirements for equipment placed only in Mission Critical Data Rooms (see 1.7, D). Some reliability requirements are modified to account for the increased environmental control in these facilities. This level should only be used if it is directed by an AT&T representative.
- C. **LEVEL THREE - (ESR-003-XXX).** Level Three refers to the maximum applicable ATT-TP-76200 safety and environmental reliability requirements for equipment deployed in the network. Unless otherwise detailed in this document or instructed by AT&T, Level Three is the applicable level for all network equipment.
- D. **ANCILLARY (ESR-ANC)** (Level 1, 2 or 3). Ancillary requirements refer to a subset of Level Three requirements that apply to additions to or changes to equipment previously approved for use in AT&T. If a change to an existing product, or sub-system of the product, results in the assignment of a new CLEI code, the product shall be evaluated for compliance to Ancillary requirements. See Appendix B for guidelines applicable to special considerations for testing of enhanced products.

1.8. Network Equipment Deployment Locations

- A. **CENTRAL OFFICE** - AT&T buildings dedicated to telecommunications switching and transport equipment. Due to national, state and local codes specific to these buildings, there are ATT-TP-76200 requirements that are specific to COs (e.g., ANSI T1.319 Fire Spread). CO equipment requirements also apply to OSP Huts, CEVs, and other OSP enclosures with active environmental controls.
- B. **NON-CENTRAL OFFICE BUILDING - Buildings** other than Central Offices. These buildings may be AT&T owned, AT&T leased or customer owned. Equipment is installed on the AT&T side of demark in customer premises locations. Due to national, state and local codes specific to these buildings, there are ATT-TP-76200 requirements that are specific to non-CO buildings (e.g. NRTL listing). A special category of non-central office building equipment is:
- **Mission Critical Data Room** - Dedicated Data Room compliant to TIA-942, Telecommunications Infrastructure Standard for Data Centers, including:
 - Dedicated HVAC with HVAC back-up
 - Temperature range 20°C to 25°C
 - Humidity range 40% – 55% RH
- C. **OUTSIDE PLANT** – Outside Plant part of the network. Typically network locations between the inside of COs, Non-CO buildings and Customer Premises. There are three levels of OSP environments:
- **OSP Class Two** refers to an internal environment typical to GR-487 compliant remote cabinets, per Telcordia GR-3108-CORE.

- **OSP Class Three** Equipment refers to an internal environment typical to GR-487 non-compliant remote cabinets, per Telcordia GR-3108-CORE.
- **OSP Unprotected** Environment refers to an open, unprotected environment. Typically ONTs, active NIDs (iNIDs), etc where the equipment electronics are an integral part of the enclosure.

Table 1-1
ESR Forms for Evaluation Levels and Locations*

	Level One	Level Two	Level Three	Ancillary
Central Office	ESR-001	n/a	ESR-003-CO	ESR-ANC
Non-CO Building	ESR-001	n/a	ESR-003-NCO	ESR-ANC
MC Data Room	ESR-001	ESR-002	ESR-003-NCO	ESR-ANC
OSP Class Two	ESR-001	n/a	ESR-003-OSP	ESR-ANC
OSP Class Three	ESR-001	n/a	ESR-003-OSP	ESR-ANC
OSP Unprotected	ESR-001	n/a	ESR-003-OSP	ESR-ANC

*Equipment must conform to requirements for each location and/or application for which it is intended.

1.9. Product Change Notices (PCNs)

PCNs must be evaluated for their effect on the equipment's ATT-TP-76200 compliance.

- A. When it is determined by the manufacturer, using sound engineering judgment, that a hardware or software change does not impact the equipment's ATT-TP-76200 compliance, the manufacturer may submit a letter of attestation to this effect. See Appendix A, paragraphs and 15.6.

NOTE: Except when it is obvious that the PCN will not affect the equipment's compliance, AT&T Services recommends that an accredited, third party, independent laboratory evaluate whether testing is required to verify compliance.

- B. When the manufacturer, a test lab or AT&T Services determine that the PCN may affect the equipment's ATT-TP-76200 compliance, the modified equipment must be tested per ATT-TP-76200, Ancillary Requirements (ESR-ANC).

NOTE: Depending on engineering judgment, not all requirements may need to be tested.

1.10. Portable Test Equipment

At a minimum, portable test sets, including OSP test sets, will be reviewed to the following requirements prior to deployment:

- Electrical Safety Review: An electrical safety review is necessary when the output voltage of the equipment exceeds 140 volts DC or 50 volts rms AC.

- **Radiated Emissions:** A review is necessary when the equipment supplier cannot certify compliance to FCC Part 15. In the absence of FCC Part 15 compliance, the radiated emissions requirements and test methods of GR-1089, Section 3 shall apply.

NOTE: Portable test sets that do not exceed 140 volts DC or 50 volts rms AC and are certified compliant to FCC Part 15, may be considered in compliance with the electrical safety and radiated emissions requirements and do not require review by the NEBS group.

1.11. Customer Premises Equipment (see *Non-CO Buildings, 1.7, B*)

AT&T Services requirements for network equipment intended for location in customer premises, that is, all non-central office areas (e.g., data rooms, NOCs, etc.) are contained in Form ESR-003-NCO, and shall include listing by a Nationally Recognized Testing Laboratory. If the equipment is intended ONLY for customer premises locations (NOT COs) listing will be accepted for fire resistance compliance and in some cases listing and FCC electromagnetic certification (e.g. FCC Part 15) may be accepted as verification of conformance to other ATT-TP-76200 **Level 1** requirements.

1.12. Outside Plant Equipment

Requirements for OSP equipment are contained in Form ESR-003-OSP. For questions of test requirements for OSP cabinets and other enclosures contact Jeff Smith at (317)685-2864.

1.13. AT&T non-Telco Affiliate Equipment

AT&T non-telco affiliate equipment installed shall, at a minimum, meet ATT-TP-76200 Level 1 (safety) criteria applicable for the location of deployment. ATT-TP-76200 Level 1, 2 or 3 criteria may be desired or required for some affiliate equipment.

1.14. Collocator Equipment

Per FCC Order 99-48, AT&T may verify that Collocator's equipment meets the same safety requirements as equipment that AT&T places in its network. A list of equipment known to be deployed in AT&T's network may be obtained from the All Equipment List (AEL) located on the AT&T extranet site at <https://clec.sbc.com/clec/> (this site is available to Collocators who have a working contract with AT&T). Equipment that is already listed on the AEL will not be required to under go a safety evaluation for compliance to this document*.

Equipment not listed on the AEL must be evaluated for compliance to ATT-TP-76200 Level 1 (safety) requirements or Telcordia SR-3580 Level 1 (safety) requirements*.

NOTE: An ATT-TP-76200 ESR Form must also be provided to allow for network integration. (See Appendix A for an overview of the evaluation process).

*Equipment on the AEL and equipment that has been evaluated as compliant to this requirement must still meet the requirement of being necessary for interconnection and access to UNEs.

1.15. *Equipment Testing Requirements*

Any alterations to the test protocols given in this document or in referenced test standards documents must be clearly identified in the executive summary and the test results sections of test reports. Testing performed per the Telecommunications Providers Group (TCG) checklist will be acceptable to AT&T. This checklist is available on AT&T's web site at <https://ebiznet.sbc.com/sbcnebs/>.

1.16. *Laboratory Accreditation Requirements*

For tests completed after January 1st, 2004, AT&T Services will only accept test reports submitted by testing laboratories that are accredited by an accreditation agency (e.g., the American Association for Laboratory Accreditation, National Voluntary Laboratory Accreditation Program) that is recognized by the National Cooperation for Laboratory Accreditation.

- The scope of accreditation must include the test standards referenced in test reports.
- AT&T Services will accept test reports that include test data generated at non-accredited test laboratories if the tests are witnessed and verified by a representative from a company that operates an accredited test laboratory. Records shall be retained that clearly demonstrate that the individual who witnessed the test has the appropriate expertise and competence. Submitted test reports shall clearly distinguish test data generated in-house at an accredited laboratory from witnessed and verified test data. The test report shall also contain a statement attesting to the compliance of the testing to applicable standards.
- Test laboratories located outside of the United States shall be accredited in accordance with ISO/IEC Guide 25 or ISO/IEC 17025. This accreditation must be performed by a nationally recognized accrediting body operating in accordance with ISO/IEC Guide 58.
- Each test report submitted to AT&T Services shall contain accreditation and scope information or a letter containing this information may be forwarded for our files.

1.17. Additional AT&T Services Requirements

The following is for notification purposes only. Refer to the directions given to obtain further information on these subjects. Verification of conformance to these subjects is not part of the evaluation process for this section.

Alarms

- A. The AT&T Services Alarm Standards Technical Manual, BSP 801-601-900MP, is the official repository of standard alarm information for all network elements (NE) deployed within the AT&T Local Exchange Carriers' (AT&T LEC) network of central offices and remote locations, exclusive of switching equipment. Specifically, this document includes, but is not limited to, concepts and philosophies, interconnect methodologies and alarm details, as related to the alarm monitoring of transmission equipment, loop equipment, power equipment and building or environmental equipment. This document is available to equipment manufacturers which have non-disclosure contracts with AT&T at the AT&T Services Extranet web site. Questions regarding access to this web site should be referred to the vendor's local AT&T Services contacts. All others should reference the requirements for alarms found in Section 4.4 of TP76450.
- B. Prior to the installation of any network equipment into an AT&T LEC location, and, as part of the Approval For Use (AFU) process, all such equipment shall be reviewed by the Alarm Standards Committee to ensure that it meets the minimum alarm requirements set forth in the afore mentioned ATT 801-601-900 and/or TP76450.
- C. All manufacturers submitting network equipment for review and consideration should pay specific attention to Section 4.4 of TP76450 for minimum alarm and interconnection requirements.

Synchronization

Equipment approved for use in the AT&T LEC network must be compliant to AT&T Services Synchronization standards. These requirements are contained in the AT&T Services document *AT&T Services Basic Synchronization Requirements for Network Elements* (does the doc have a number that can be searched for?). Information on AT&T Services synchronization requirements can be found on the AT&T Services Common Systems Extranet web site or contact the company representative.

Placement and Interconnection Standards

Other AT&T Services physical and functional requirements pertaining to new equipment placement in and connection to AT&T facilities (e.g., dc power, cable routing and connections, etc.) are contained in TP 76450. This document may be obtained from the AT&T Services internet web site at <https://ebiznet.sbc.com/sbcnebs/>.

1.18. *Applicability of Other Publications*

All or part of a product's requirements and objectives may be contained in other technical publications for some subjects. Unless otherwise stated in the text of this section all references to other publications are to their most current issue. AT&T requires compliance to Telcordia GR-63-CORE Issue 3 and GR-1089-CORE Issue 4.

1.19. *Reasons for Reissue*

ISSUE 9:

The contents of this section are revised according to business objectives and the evolution of technology. The Reason for Reissue part of this section identifies the changes made to this document when it is revised.

a) Alignment with new GR-63-CORE, ISSUE 3 requirements. Specifically changed are:

- Paragraph 6.3 Heat Dissipation
- Paragraph 8.3 - Fan Filter requirements
- Paragraph 10.5 – Fire Spread

b) Alignment with new GR-1089-CORE, ISSUE 4 requirements. Specifically changed are:

- Paragraph 2.1, GR-1089-CORE, Issue 4 exceptions detailed
- Paragraph 2.6 B, Lightning and AC Power Faults revised

c) Other document changes

- Section 12 revised to address new requirement for reporting GR-78-CORE conformance.
- Old Section 12, new Section 13 – added section for new outside plant enclosure requirements.
- Paragraph 13.4.1 added
- Paragraph 15.7 – Form ESR-003-OSP revised to include GR-49 reference for enclosures.
- Section 16.4, A 7 and A8 added
- Paragraph 16.4.1 Fast Track Report Added
- Section 16.5 – Letter of Attestation revised to include deployment locations and new restrictions on use (embedded protectors).

ISSUE 10

- Requirement 2.1 revised
- Requirement 6.3.A.4 revised.
- Requirement 6.3.D.4 revised.
- First paragraph Section 7 moved and revised.
- Requirement 16.4.B.5 added
- Form 16.4.1 revised

1.20. *Effective Date of this Issue*

Compliance to new or modified requirements added to this issue of ATT-TP-76200 or added to GR-63-CORE, Issue 3 or GR-1089-CORE, Issue 4 will be accepted immediately and will be required for any equipment tests completed after 1/1/2007, except where otherwise expressly noted in this document.

1.21. *Comments*

Comments or questions regarding the content of this section should be directed to:

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2. ELECTROMAGNETIC COMPATIBILITY

2.1. GR-1089-CORE

The electromagnetic compatibility and electrical safety requirements for equipment products located in Central Offices and Mission Critical Data Rooms are stated in Telcordia publication GR-1089-CORE, Issue 4, June 2006, Electromagnetic Compatibility and Electrical Safety Generic Criteria for Network Telecommunications Equipment. The electromagnetic compatibility and electrical safety requirements for equipment products located in the outside plant (OSP)., including customer premises are stated in Telcordia publication GR-3108-CORE, Issue 1, July 2004, Generic Requirements for Network Equipment in the Outside Plant

AT&T has adopted GR-1089, Issue 4 with the following exceptions:

AT&T has not adopted Section 4.8, Criteria for Equipment Interfacing With Agreed Primary Protection. Equipment with agreed protection may be considered on a case-by-case basis. However, it is our expectation that equipment be designed to operate with carbon block protectors as described in GR-1089, Section 4.2.1.

For Equipment With Integrated Protection (EIPP), equipment with field serviceable integrated primary protection, must be equipped with High Voltage Limiting gas tube protection as specified in GR-974.

Equipment containing primary protection other than a high voltage limiting gas tube will be considered on a case-by-case basis.

2.2. Equipment Type

The product supplier shall determine the Equipment Type and record the appropriate numerical equipment Type in the Y Column of form ESR-001, ESR-002, ESR-003-CO, ESR-003-NCO, ESR-003-OSP or ESR-ANC. To determine the Equipment Type, refer to GR-1089-CORE, Appendix B for all equipment. GR-1089-CORE provides guidelines for applying the aforementioned electromagnetic compatibility requirements. Application of the various criteria is a function of the type of equipment under consideration, its connection to the telecommunications network and the intended location of the equipment.

2.3. Electromagnetic Interference

A. Central Office Equipment shall meet the radiated emission requirements stated in section 3.2 of GR-1089-CORE.

B. Outside Plant Equipment shall meet the radiated emission requirements stated in section 5.2.3 of GR-3108-CORE.

C. Mission Critical Data Room equipment shall meet the applicable radiated emission requirements stated in section 3.2 of GR-1089-CORE (See Form ESR-002).

2.4. Conducted Emissions

A. Central Office Equipment shall meet the conducted emission requirements stated in section 3.2 of GR-1089-CORE.

B. Outside Plant Equipment shall meet the conducted emission requirements stated in section 5.2.3 of GR-3108-CORE.

C. Mission Critical Data Room equipment shall meet the applicable conducted emission requirements stated in section 3.2 of GR-1089-CORE (See Form ESR-002).

2.5. Immunity

A. Central Office Equipment shall meet the immunity requirements stated in section 3.3 of GR-1089-CORE.

B. Outside Plant Equipment shall meet the immunity requirements stated in section 5.2.3 of GR-3108-CORE.

C. Mission Critical Data Room equipment shall meet the applicable immunity requirements stated in section 3.3 of GR-1089-CORE (See Form ESR-002).

2.6. Lightning and AC Power Faults

A. Central Office Equipment shall meet the applicable lightning and ac power fault requirements stated in sections 4 of GR-1089-CORE.

B. Outside Plant Equipment shall meet the applicable lightning and ac power fault requirements stated in section 5.2.4 of GR-3108-CORE. The equipment's Port Type shall be determined using GR-1089, Appendix B.

C. Mission Critical Data Room equipment shall meet the applicable lightning and ac power fault requirements stated in sections 4 of GR-1089-CORE (See Form ESR-002).

2.7. Steady State Power Induction

A. Central Office Equipment shall meet the steady state power induction requirements stated in section 5 of GR-1089-CORE.

B. Outside Plant Equipment shall meet the steady state power induction requirements stated in section 5.2.5 of GR-3108-CORE.

C. Mission Critical Data Room equipment shall meet the applicable steady state power induction requirements stated in sections 5 of GR-1089-CORE (See Form ESR-002).

2.8. Electrical Safety Criteria

A. Central Office Equipment shall meet the electrical safety requirements stated in section 7 of GR-1089-CORE.

B. Outside Plant Equipment shall meet the steady state power induction requirements stated in section 5.2.7 of GR-3108-CORE.

C. Mission Critical Data Room equipment shall meet the applicable electrical safety requirements stated in sections 7 of GR-1089-CORE (See Form ESR-002).

2.9. DC Potential Difference

A. Central Office Equipment shall meet the dc potential difference requirements stated in section 6 of GR-1089-CORE.

B. Outside Plant Equipment shall meet the dc potential difference requirements stated in section 5.2.6 of GR-3108-CORE.

3. ACOUSTIC NOISE

A. Central Office, CEVs, Huts and Customer Premises equipment shall meet the acoustic noise requirements stated in section 4.6 of GR-63-CORE, Issue 3.

B. OSP Class 2 & 3 equipment will conform to Section 3.29 of GR-487-CORE when installed in cabinets.

4. ELECTROSTATIC DISCHARGE (ESD) and ELECTRICAL FAST TRANSIENTS (EFT)

A. Equipment deployed in the central office and Outside Plant shall meet the requirements in this section.

B. Equipment deployed in a Mission Critical Data Room shall meet the applicable Electrostatic Discharge requirements stated in section 2 of GR-1089-CORE, ISSUE 4 (See Form ESR-002).

4.1. ESD Immunity Criteria

Equipment shall meet the ESD immunity criteria requirements for normal operation and be tested for installation and repair objectives according to section 2.1.2 (ESD Immunity Criteria) of Telcordia's GR-1089-CORE, ISSUE 4 document. All tests shall be conducted as described in section 2.1.4 of GR-1089 and IEC Publication 61000-4-2.

4.2. Special Requirements and Maintenance Information

Any additional equipment-specific requirements in paragraph 2.1.2.4 of GR-1089-CORE, ISSUE 4 shall be described in the report.

4.3. Electrical Fast Transient (EFT)

- A. Equipment shall be tested in accordance with section 2.2 of Telcordia's GR-1089-CORE, ISSUE 4 document with tests conducted as described in section 2.2.1.
- B. Equipment deployed in a Mission Critical Data Room shall meet the applicable Electrical Fast Transient requirements stated in section 2.2 of GR-1089-CORE, ISSUE 4 (See Form ESR-002).

5. GROUNDING

- A. Equipment deployed in the central office and Outside Plant shall meet the requirements in this section.
- B. Equipment deployed in a Mission Critical Data Room shall meet the applicable Grounding requirements stated in section 9 of GR-1089-CORE, ISSUE 4 (See Form ESR-002).

5.1. Bonding and Grounding Requirements

Structures, equipment and power systems submitted for evaluation shall meet applicable Bonding and Grounding requirements of section 9 of GR-1089-CORE, Issue 4. . For Ancillary reviews, only the short circuit test data of section 9.10 is required.

6. THERMAL

6.1. Temperature and Humidity Requirements

- A. Indoor Thermal Environments

Network equipment located in structures with a controlled environment (central offices, huts, CEVs, etc.) must conform to requirements in Section 4.1 of GR-63-CORE, Issue 3.

B. Protected Outdoor Thermal Environments

Equipment intended for deployment in enclosures with an uncontrolled environment (e.g. remote cabinets without active temperature controls) must conform to requirements in Sections 4.2 through 4.5 of Telcordia GR-3108-CORE, Issue 3.

C. Unprotected Outdoor Thermal Environment

Electronic equipment that is mounted and deployed as an integral part of an OSP enclosure shall be tested as a unit with enclosure and electronics configured as intended for deployment. The equipment must conform to requirements in Telcordia GR-3108-CORE, Sections 4.2 through 4.5. However, the test methodology of Section 4.5 shall be revised so that the high temperature setting of 65°C (149°F) is adjusted to be 46°C (115°F) plus solar loading. Solar loading shall be calculated per GR-487-CORE, Section 3.26.

D. Mission Critical Data Room Thermal Environments

Equipment intended for deployment in Mission Critical Data Rooms must be tested to Operating Conditions for criteria [72, 73] in Telcordia GR-63-CORE, ISSUE 3.

NOTE: Requirements other than those contained in this document may apply to auxiliary hardware used in an uncontrolled environment including, power supplies and batteries.

6.2. Altitude

A. Central Office Equipment shall meet the altitude requirements and objective stated in section 4.1.3 of Telcordia publication GR-63-CORE, Issue 3.

B. Outside Plant Equipment shall meet the altitude requirements and objective stated in section 6.3 of Telcordia publication GR-3108-CORE, Issue 3.

C. Not applicable to Mission Critical Data Room Equipment.

6.3. Heat Dissipation

A. Central Office Equipment

- 1) The normal continuous duty heat dissipated (in Watts) by the equipment shall be stated on ATT-TP-76200 form ESP-001 or ESP-002 form for individual units and maximum configured systems, if applicable. Heat dissipation is usually considered the power draw by equipment minus work accomplished by equipment and the value can be calculated or measured by the manufacturer. Manufacturer shall refer to Telcordia GR-3028 Section 6. Equipment Specifications for determining heat dissipation data for products and information reported as required under equipment data reporting. ATT-TP-76200 Form ESP-001 or ESP-002 is to be used for reporting to AT&T Services in place of form referred to in GR-3028 Appendix F.

- 2) Manufacturer shall state **Yes** for item 6.3B (2) on Form ESR-002 if product is electric motor fan forced cooled or **No** if product is convection cooled or cooled by other than fan forced cooling design. Other cooling methods shall be explained with a statement included as attachment to form ESP-001/002.
- 3) Equipment cooling scheme in central offices typically has cooling air inlet in front face of equipment and heat exhaust to back or top of equipment, per GR-3028 EC Cooling Class F1-R3. The equipment cooling class with bottom-front inlet air to rear-top exhaust shall be AT&T Services' preferred configuration for all fan forced cooled products*. Manufacturer shall state **Yes** for item 6.3B (3) on Form ESR-002 if cooling air flow of your product adheres to this cooling scheme. Heat exhaust to side(s) or front of equipment either as primary or secondary paths requires answering this question with a **No**.

*NOTE: *Equipment cooling airflow designs other than front to rear/top will be considered by AT&T Services; however, those products will be considered on a case by case basis and may require deployment restrictions or equipment revisions prior to deployment.*

- 4) Equipment surfaces that face aisle or where normal maintenance functions are performed shall comply with requirements stated in R4-22 of paragraph 4.1.7 Surface Temperature. All equipment surfaces that personnel may be exposed to shall be within limits shown in Table 4-6. For equipment that has demonstrated conformance to the Surface Temperature requirements manufacturer shall state **YES** for item 6.3B (4) on form ESR-002. If equipment has not been tested or does not conform, manufacturer shall state **NO**.

**Table 4-6
(From Telcordia GR-63)**

Materials	Permitted Temperature (°C) as a Function of Exposure Time	
	Unintentional Contact or Parts Held for Short Periods in Normal Use	Prolonged Use
Metals	55	48
Nonmetals	70	48

B. Outside Plant Equipment – Class 1, 2, & 3 Environments

Heat dissipation data for GR-3108 Class 1, 2, or 3 outside plant equipment as required under paragraph 4.1 Heat Dissipation and Heat Characteristics are to be reported on ATT-TP-76200 Forms ESP-001 or ESP-002.

C. Outside Plant Equipment – Unprotected Environment

D. Mission Critical Data Room Equipment

- 1) The normal continuous duty heat dissipated (in Watts) by the equipment shall be stated on ATT-TP-76200 form ESP-001 or ESP-002 form for individual units and maximum configured systems, if applicable. Heat dissipation is usually considered the power draw by equipment minus work accomplished by equipment and the value can be calculated or measured by the manufacturer. Manufacturer shall refer to Telcordia GR-3028 Section 6. Equipment Specifications for determining heat dissipation data for products and information reported as required under equipment data reporting. ATT-TP-76200 Form ESP-001 or ESP-002 is to be used for reporting to AT&T Services in place of form referred to in GR-3028 Appendix F.
- 2) Manufacturer shall state **Yes** for item 6.3B (2) on Form ESR-002 if product is electric motor fan forced cooled or **No** if product is convection cooled or cooled by other than fan forced cooling design. Other cooling methods shall be explained with a statement included as attachment to form ESP-001/002.
- 3) Equipment cooling scheme in Data Rooms typically has cooling air inlet from raised floor tiles in front of or underneath equipment and heat exhaust to back or top of equipment, per GR-3028 EC Cooling Class F1-R3 or B-T. The equipment cooling class with bottom-front inlet air to rear-top exhaust shall be AT&T Services' preferred configuration for all fan forced cooled products*. Manufacturer shall state **Yes** for item 6.3B (3) on Form ESR-002 if cooling air flow of your product adheres to this cooling scheme. Heat exhaust to side(s) or front of equipment either as primary or secondary paths requires answering this question with a **No**.
- 4) Same face temperature requirements as stated in TP76200 6.3 Heat Dissipation Central Office Equipment paragraph 4).

**NOTE: Equipment cooling airflow designs other than front to rear/top will be considered by AT&T Services; however, those products will be considered on a case by case basis and may require deployment restrictions or equipment revisions prior to deployment.*

7. DC POWER

The following requirements are referenced from, but not limited to, the American National Standards Institute (ANSI) publication ANSI T1.315-2001 Test reports showing conformance to all objectives in GR-1089-CORE Section 10 will be accepted as demonstrating conformance to this Section (ATT-TP-76200 Section 7).

A. All network equipment deployed in Central Offices and Outside Plant shall be DC powered and meet the requirements in this section.

B. DC powered equipment deployed in a Mission Critical Data Room shall meet the applicable Power requirements in this section.

NOTE: AT&T Services has other DC Power requirements including but not limited to those referenced in ATT -TP-76450, Telcordia's GR-499-Core and GR-513-Core.

7.1. Noise Immunity

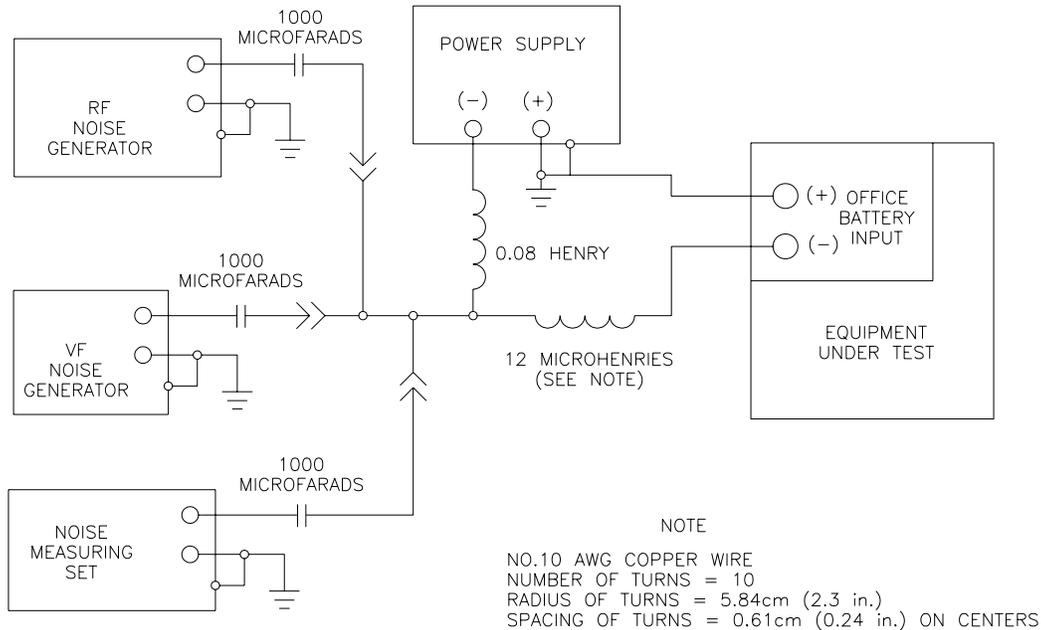
Noise immunity tests in this section are based on the requirements outlined in ANSI T1.315-2001, section 5.5.1.

The equipment shall meet its operational requirements in the presence of the specified levels of electrical noise applied to the power-input terminals. The noise levels in Table 7-1 represent simulated noise from the dc power plant and include noise returned from the equipment under test. Wideband noise is defined as the V_{rms} in any 3 KHz frequency band from 10 KHz - 20 MHz. This test shall be performed on a plug-in, assembly, system or frame. A suggested test setup for performing this test is illustrated in Figure 7-1. The equipment supplier shall provide a report containing the test methods and results for the above requirement.

Table 7-1
Test Levels for Noise Immunity

Voiceband C Message dBrnC @ 600 ohms	Peak-To-Peak (mV)	Wideband (mV rms)
56	480	100

Figure 7-1
Noise Immunity Test Setup

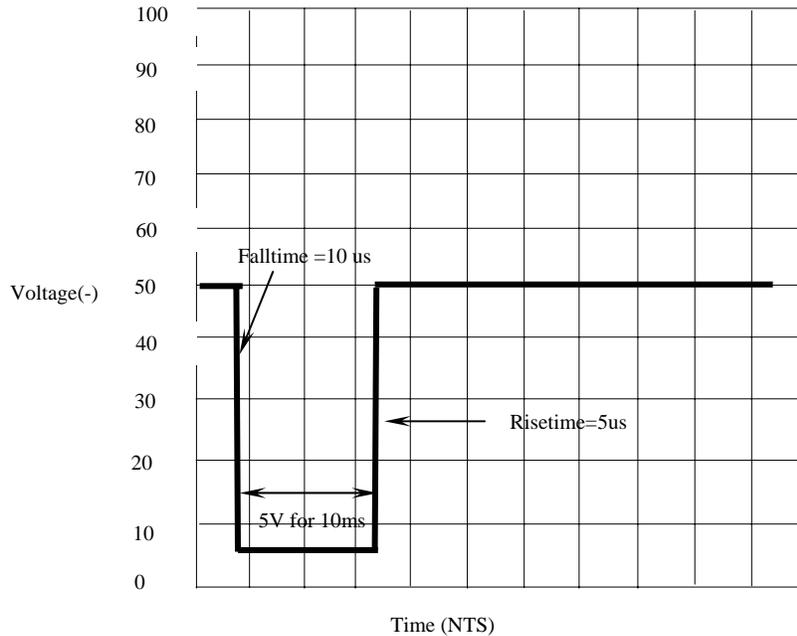


7.2. Transient Tests

The tests in this section are based on the under voltage transient requirements outlined in ANSI T1.315-2001, section 5.4

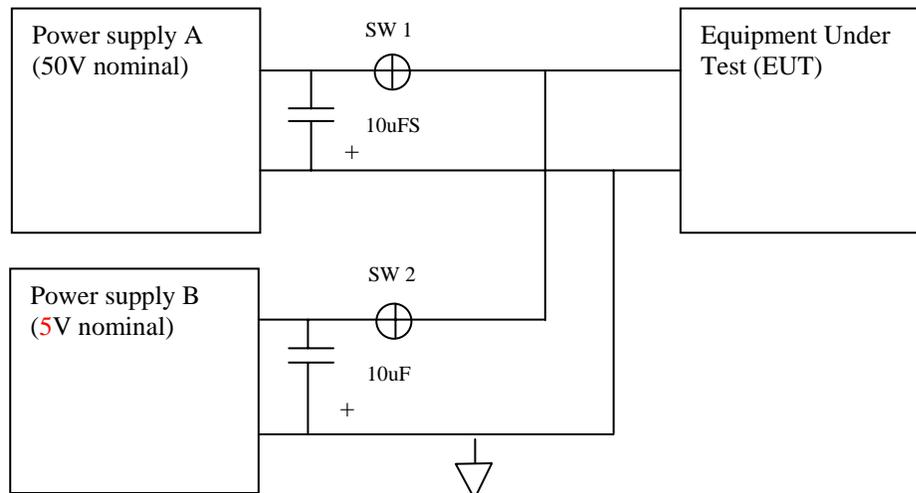
- A. The equipment shall not suffer damage when the waveform defined in Figure 7-2 is applied at the power input terminals of the equipment under test. Following application of the test waveform and return to the nominal 50 volts, the equipment shall automatically return to its operational specifications without manual intervention. For equipment with redundant power supplies, one power supply shall be disabled for this test. The equipment supplier shall provide a report containing the test methods and results for the above requirement.

Figure 7-2
Under Voltage Transient Waveform



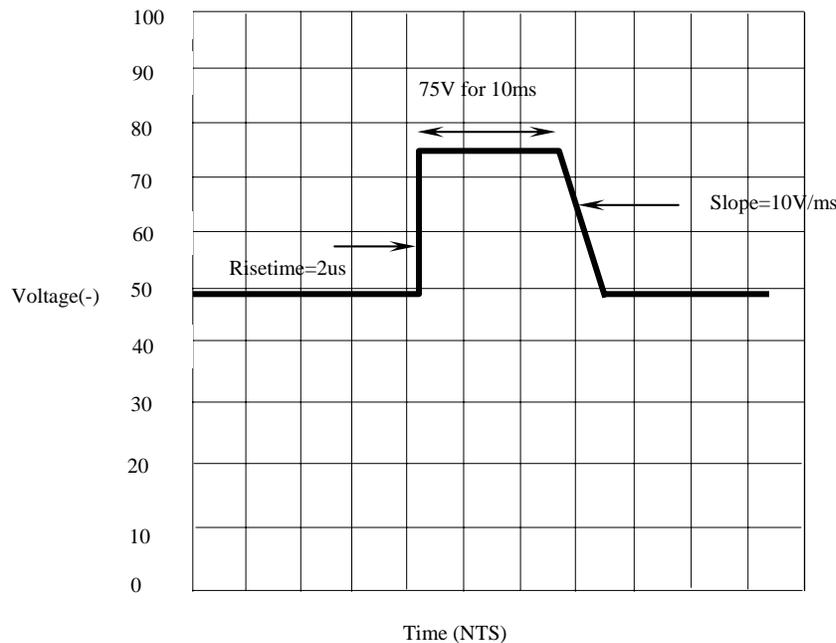
Recommended Test Procedure: The undervoltage transient can be generated with the test set up shown in Figure 7-3, which is taken directly from ANSI T1.315-2001. The switches SW1 and SW2 are solid state with switching times of 1 microsecond or less. The rise time for this transient is not critical as long as it is less than the specified rise time. The control for the switches must prevent both switches from being on at the same time. SW1 must be able to supply the EUT with its required operational current and both switches should be capable of supplying a peak current of 100A. If power supply B cannot sink a large value of current it must be preloaded to insure the input capacity of the power supply can be discharged rapidly.

Figure 7-3
Undervoltage Transient Test Setup



- B. The equipment shall meet its operational requirements during and following any single isolated over voltage transient applied between the power input terminals and having characteristics as shown in Figure 7-4. The duration of the over voltage transient shall be measured at an amplitude that begins and ends at a point midway between the 50V (nominal voltage) and 75V. The equipment supplier shall provide a report containing the test methods and results for the above requirement.

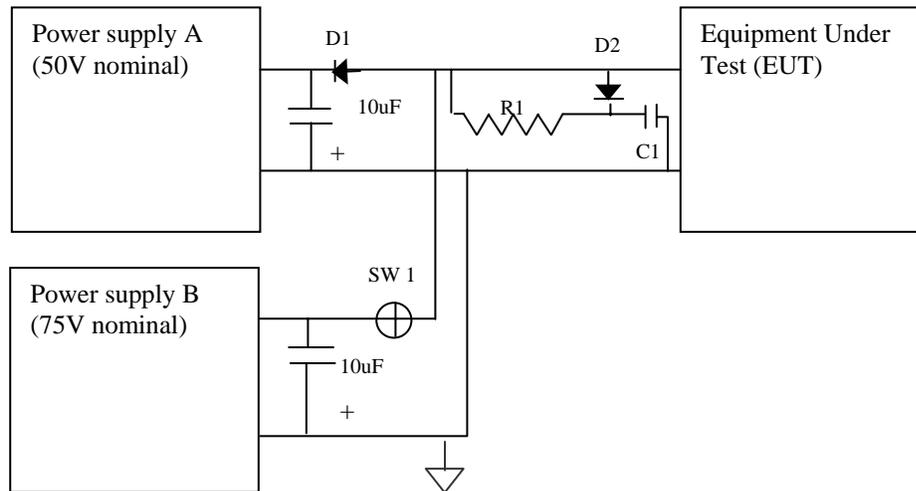
Figure 7-4
-27 VDC Overvoltage Transient Waveform



Recommended Test Procedure: The over voltage transient can be generated with the test set up shown in Figure 7-5 which is taken directly from ANSI T1.315. The switch SW1 is solid state with a switching time of 1 microsecond or less. The rise time for this transient is not critical as long as it is less than the specified rise time. The diode D1 isolates power supply A from power supply B. Diode D2 allows a fast rise time while controlling the fall time by capacitor C1.

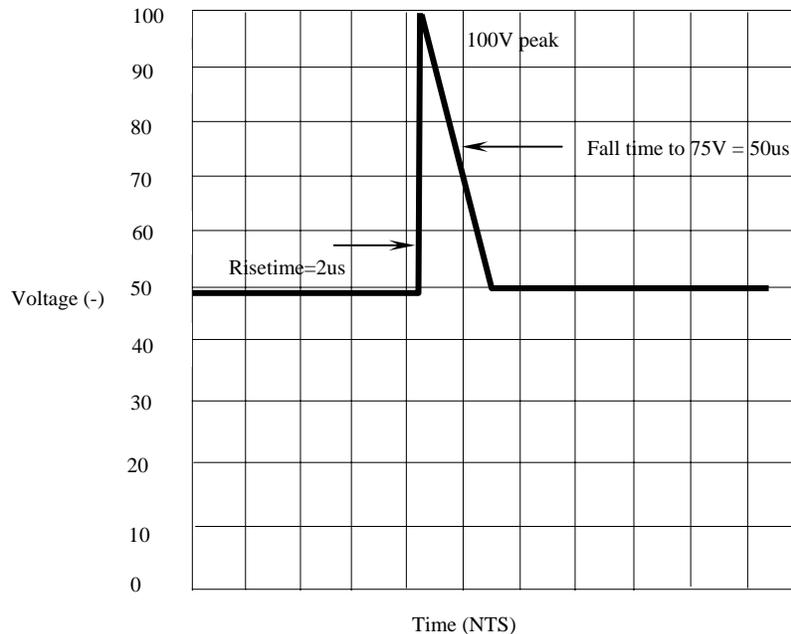
Resistor R1 charges capacitor C1 to 75 volts during the 10 milliseconds that SW1 is closed. D1 must be capable of supplying the EUT with its required operation current. The value of C1 must be chosen experimentally and will depend on the input power. The nominal value of C1 is 1.6µF per watt of input power. The slope of the decay will be approximately linear and will depend on the EUT input current versus voltage characteristics over the 50V to 75V range. The duration of the fall time should be approximately 2.5ms.

Figure 7-5
Over Voltage Transient Test Setup



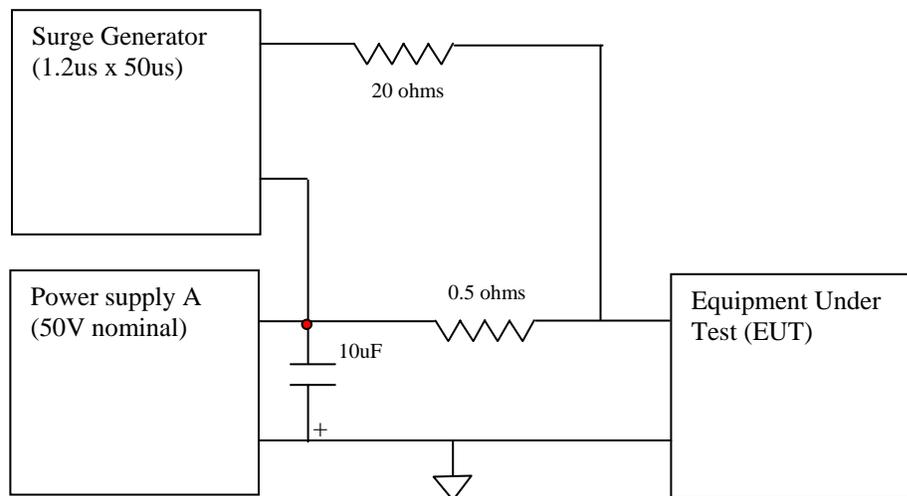
- C. The equipment shall meet its operational requirements during and following the simulated operation of a current protection device (e.g., fuse or circuit breaker). A transient resulting from the operation of a protection device is depicted in the waveform of Figure 7-6. The waveform is applied to the power input terminals of the equipment. The equipment supplier shall provide a report containing the testing methods and results for the above requirement.

Figure 7-6
Over Current Protection Device Transient Waveform



Recommended Test Procedure: The over current protection device transient can be generated with the test set up shown in Figure 7-7 which is taken directly from ANSI T1.315. The over current protection (impulse) transient is produced by a surge generator with a rise time of 1.2 microseconds, fall time of 50 microseconds and a 1000 ampere short circuit current at 2000 volts. With the test set up shown, a 2000 V surge will produce a 50 V surge across the 0.5 ohm resistor and the surge will produce up to 100 A into the EUT. This test method is compatible with EUTs having input current up to 25 A by increasing the power supply voltage to compensate for the voltage drop across the resistor. A suitable inductor having a low dc resistance and a high dc current rating may be connected across the 0.5 ohm resistor to reduce the dc voltage drop. The inductor must not distort the impulse transient waveform.

Figure 7-7
Over Current Protection Transient Test Setup



7.3. Current Drains

- A. The List 1 current drain, for a maximum configuration of cards and shelves, shall be provided in amperes on the appropriate ESP form. List 1 drain is the average busy-hour current at normal voltage and operating conditions.
- B. The List 2 current drain, for a maximum configuration of cards and shelves, shall be provided in amperes on the appropriate ESP form. List 2 drain is the peak current during emergency operating limits of the EUT and with normal operating conditions (no short circuits or other malfunctions).

7.4. Minimum Operating Voltage

The tests in this section are based on the undervoltage requirements outlined in ANSI T1.315-2001, Section 5.2. Specify the minimum voltage at which the equipment remains fully operational and verify the equipment will recover to a fully operational state after losing power. A suggested test method is outlined below:

- A. With maximum configurations of cards and shelves, apply 40V dc to the input terminals and verify normal operation of the equipment. Lower the input voltage by 1volt and hold for 30 seconds. Record the voltage, current drain and whether or not the equipment is operating normally.
- B. Continue to lower the input voltage in 1-volt increments as above until abnormal operation of the equipment is observed. Record the minimum voltage and associated current at which. The equipment remains fully operational. Enter the voltage and current on the ESP form
- C. Continue to lower the input voltage in 5-volt increments for 30 seconds at a time until reaching 0 volts. There must be no damage to equipment
- D. Return the input voltage to 48 volts. The equipment must restart without manual intervention and return to normal operation within 30 minutes.

8. AIRBORNE CONTAMINANTS

8.1. Controlled Environments

Equipment intended for installation in controlled environment spaces shall meet the Airborne Contaminants requirements for indoor equipment as stated in section 4.5 of GR-63-CORE, Issue 3.

A. Central Office Equipment shall conform to the MFG test performed for 14 days as detailed in Telcordia GR-63, Issue 3.

B. Mission Critical Data Room Equipment shall conform to the MFG test performed for 10 days as detailed in Telcordia GR-63, Issue 3.

8.2. Uncontrolled Environments (OSP)

Equipment intended for use in outdoor air environments (i.e., cabinets installed on pads or poles) with no filtration shall meet the Airborne Contaminants requirements for outdoor equipment as stated GR-3108-CORE, Section 6.4. The MFG test shall be performed for 14 days for all environmental class locations.

8.3. Fan Filter Requirements

A. Central Office Equipment shall conform to the fan filter requirements contained in GR-63_CORE, Issue 3.

B. Mission Critical Data Room Equipment shall conform to the fan filter requirements contained in GR-63_CORE, Issue 3.

C. OSP equipment shall not be deployed with filters and conformance to fan filter standards is not required.

9. SHOCK AND VIBRATION

Central Office and Outside Plant Equipment shall conform to the requirements in this section except where specified differently. Mission Critical Data Room equipment shall conform to requirements in this section when so specified.

9.1. Handling and Transportation - Shock

Network equipment shall be designed with tolerance for shock of transportation and handling from manufacturer's facilities to job sites without sustaining physical damage or affecting functional performance.

A. Central Office and Mission Critical Data Room Equipment

The manufacturer shall be in compliance to handling and transportation shock requirements specified in Telcordia document GR-63-CORE, ISSUE 3. Product test documentation may not be requested with the understanding that the equipment manufacturer is responsible to assure receipt of acceptable and functional products to the job sites.

B. Outside Plant Equipment

The manufacturer shall be in compliance to transportation shock requirements specified in Telcordia document GR-63-CORE, ISSUE 3 and the impact and drop test requirements in GR-49-CORE or GR-950-CORE.

9.2. Handling and Transportation - Vibration

Network equipment shall be designed with tolerance for transportation and handling from manufacturer's facilities to the job site without sustaining physical damage or affecting functional performance. The manufacturer shall state **Yes** if in compliance to handling and transportation vibration requirements specified in Telcordia document GR-63, **No** if not in compliance or if product has not been tested. AT&T Services may not request test documentation with the understanding that the equipment manufacturer is responsible to assure receipt of an acceptable and functional product to the AT&T job site.

9.3. Earthquake

A. Central Office and Outside Plant Equipment

Equipment may be deployed in high earthquake risk areas. Network equipment considered for AT&T Level 3 service shall be designed for service in high seismic risk locations. Equipment shall demonstrate conformance to Telcordia GR-63-CORE, ISSUE 3 or ANSI T1-329 earthquake requirements by having equipment assembly tested on shake table and submitting documentation of successful test results. The manufacturer shall state **Yes** if in compliance to earthquake requirements specified in Telcordia document GR-63-CORE or ANSI T1-329, No if not in compliance or if product has not been tested. Manufacturer may state **N/A** for products that are intended for *low seismic risk applications only* and has written statement from AT&T Services confirming the limited application. Equipment considered for Level 1 service does not require earthquake tests to be conducted; however, equipment shall be installed in framework suitable for resisting earthquake loads and framework secured appropriately to building. Network equipment intended for outside plant applications and designed in accordance to GR-3108 will be in conformance following requirements of central office equipment.

B. Mission Critical Data Room Equipment

Equipment shall demonstrate conformance to Telcordia GR-63-CORE, ISSUE 3 or ANSI T1-329 earthquake requirements for Zone 4 if deployed in a Zone 4 area or Zone 2 if not in Zone 4 area by having equipment assembly tested on shake table and submitting documentation of successful test results. The manufacturer shall state **Yes** if in compliance to earthquake requirements specified in Telcordia document GR-63-CORE, ISSUE 3 or ANSI T1-329

NOTE: All equipment placed on an access floor system shall be secured against overturning, lateral displacement and pounding into adjacent equipment with securing methods that restrain the equipment back to the building structure. The equipment shall not be secured to the access floor system as the primary means for restraint of the equipment unless the floor system has been designed and constructed to accept the equipment loads along with the normal floor loads. Access floor systems not designed to restrain equipment frames shall not be modified, adapted or otherwise reconfigured to secure equipment since it will be unlikely that floor components will handle the added equipment loads. Access floor systems installed in an environment where network services will be provided must be designed for greater vertical and lateral loading capabilities. Floor panel shall be minimum 1500 pound rating. Overturning moment capabilities on pedestals shall be greater than 170 pounds applied to a 24" height pedestal pulled horizontally at the head of the pedestal.

In "High Seismic Risk" sites, the equipment frames shall be designed to be restrained for up to 1.6G lateral acceleration at the building floor level. Access floor systems will likely amplify the ground accelerations and it will be difficult to predict the ground accelerations at the access floor panel. The ultimate ground acceleration will therefore be assumed to be 1.6 G at the top of the access floor and net affect of floor will not be considered for floor systems possessing lateral capabilities described previously. In "Low Seismic Risk" sites, the equipment frames shall be designed to be restrained for .75G lateral acceleration at the building floor level.

Network equipment conforming to Telcordia GR-63 Earthquake requirements were tested and confirmed to be in compliance based on building floor installations. The conforming equipment installed on an access floors may subject the equipment to conditions that were not evaluated and service reliability of those products may be reduced with the new conditions. These risks can be mitigated if the securing methods for the equipment framework limit frame displacement and if access floor does not contribute additional loads onto equipment frames.

9.4. Positive Latching

All network equipment shall have circuit pack latches or retainers to prevent pack and module walkout. Ejectors are not retainers and should not be used for that purpose.

9.5. Hard Drive Backup

Hard drive storage units used with network equipment shall be designed with tolerance for shock and vibration by physical isolation of drives, backup systems or self-recovery capabilities to assure service integrity.

9.6. Standard Frame

Network equipment shall be designed for mounting in telecommunications industry standard framework, relay racks. However, equipment deeper than 12 inches, heavier than 400 pounds or designed for special housings may require framework other than standard relay racks. For safety consideration, a loaded framework during transport or on site awaiting installation should temporarily be able to stand upright on its own when not secured. If weight distribution of equipment in framework results in framework falling backward or forward, special deeper framework is to be provided. Overnight or longer storage of loaded framework shall always be secured in AT&T equipment areas.

9.7. Self Support Frame

All network equipment assemblies 7'-0" tall and under shall be designed for freestanding installation in AT&T equipment areas. Freestanding is defined as framework not secured overhead but with provisions for floor anchors of appropriate size and quantity to secure equipment from overturning under worst-case site conditions.

9.8. Office Vibrations

A. Central Office and Mission Critical Data Room

Network equipment shall be designed for operation under office vibration conditions specified in Telcordia document GR-63-CORE, ISSUE 3. The manufacturer shall state Yes if in compliance to office vibration requirements in Telcordia document GR-63-CORE, No if not in compliance or if product has not been tested. AT&T Services may not request test documentation with the understanding that the equipment manufacturer is responsible to assure operational reliability for conditions that may exist in AT&T equipment locations.

B. Outside Plant

Network equipment intended for outside plant applications shall be designed and tested in accordance to Telcordia GR-3108 paragraph 6.2.2. Low Level Vibration Resistance test procedures. The low level vibration resistance tests differ from GR-63-CORE, ISSUE 3 tests, instead GR-3108 follows ETSI EN 300 019 1-4 V2.1.2 (2003-4) test standards. The manufacturer shall state Yes for item 9.8B on Form ESR-002 if in compliance to low level test requirements of GR-3108, No if not in compliance or if product has not been tested.

9.9. Floor Loading

Floor loading requirements specified in Telcordia document GR-63-CORE, ISSUE 3 shall not be exceeded. The manufacturer shall consider the worst case configuration of heaviest arrangement within a single framework when analyzing floor load. The configuration may need to include weight within a frame contributed from equipment supplied by others. Manufacturer shall state Yes if product is in conformance to floor load limits.

10. FIRE RESISTANCE

A. Central Office and Outside Plant Equipment shall conform to the requirements of this section with the exception that listed equipment installed exclusively at non-CO locations may be exempt.

10.1. Minimum Fire Resistance

This part provides the minimum fire resistance requirements for equipment products and apparatus intended for installation in the network equipment facilities. All equipment shall be tested or otherwise evaluated for compliance with the fire resistance criteria provided in this part.

10.2. General

Generally, products that have been determined to be acceptable for purchase from a fire resistance perspective do not have to be retested or evaluated unless subsequent changes to the product include one or more of the following characteristics:

- A substantial increase in the product's polymeric content (fuel load),
- A decrease in the fire resistance characteristic/rating of included components,
- An increase in the density of installed electrical components, or
- A physical change in the product's framework or enclosure construction.

10.3. *Materials/Components*

The materials and components used in the construction and interconnection of equipment shall comply with the most current issue of ANSI/T1-307. Generally, materials and components shall be constructed of polymeric materials having an oxygen index of 28% or greater and a fire resistance characteristic equivalent to or better than Under Writers Laboratories (UL) standard UL 94 V-1. Cable and wire shall generally be listed for their purpose.

10.4. *Protective Barriers*

Exposed nonmetallic equipment frame components such as protective covers, viewing panels, etc. shall comply with the ancillary materials requirements of ANSI/T1.307-2003 or later.

10.5. *Fire Spread*

A. Central Office equipment shall comply with the appropriate fire spread performance criteria provided in Telcordia GR-63-CORE, Issue 3. .

Equipment suppliers shall use appropriate ESR forms to indicate whether the product(s) under consideration have been evaluated to the criteria of 10.05 and whether a copy of the test report and test video issued by the testing facility is included for review and retention. An expected test date shall be given for all products that have not yet been evaluated to the above criteria.

B. Mission Critical Data Room Equipment shall be listed by a Nationally Recognized Testing Laboratory (NRTL)

C. OSP equipment for Class 2 and 3 environments shall comply with the fire resistance criteria of Telcordia GR-3108-CORE, Section 6.5.

11. SPATIAL

The requirements in this section apply to equipment installed in CO, Huts and CEVs

11.1. General

This part provides the physical requirements for equipment units, and equipment systems intended for use in indoor network equipment areas. This part does not apply to power equipment or office distributing frames, and is not applicable to equipment intended solely for use in outdoor equipment enclosures, or controlled environment vaults.

11.2. Equipment System

The word **system** as used in this part refers to multi-unit and multi-frame equipment configurations that collectively perform one or more telecommunications or data management functions. System equipment is normally furnished preinstalled in one or more equipment framework assemblies.

11.3. Equipment Unit

The term equipment **unit** as used in this part refers to stand alone products that are generally field mounted by equipment users.

11.4. Network Switching Systems

Network switching systems refers to a contiguous group of equipment frames whose primary purpose is typically the management of local area calling traffic. Network switching systems shall be designed so that all equipment frames, intrasystem cabling, and intrasystem cable racking can be accommodated in an equipment area having a 9'-0" clear ceiling height. To accomplish this:

- A. Equipment frames should not exceed 7'-0" in vertical height.
 - B. All intrasystem cable and cable racking arrangements within and between equipment lineups shall be contained within the area between the top of the equipment frames and the 9'-0" level.
 - C. The vertical space between the 9'-0" and 10'-0" levels shall be allocated to network interconnecting cable and its associated cable management apparatus. Intrasystem cable rack designs should include provisions for the support and management of office cabling that terminates in the switch as well as cabling that transverses the switch's equipment area.
- Suppliers shall use appropriate ESR form to indicate whether their switching equipment design complies with 11.4 through 11.4(c).

11.5. Other Equipment Systems

Frame level equipment systems intended for random location within a building:

- A. Shall be mounted in frames or cabinets that are 7'-0" or less in vertical height and equal to or greater than the overall depth of installed equipment and all possible network interconnection cabling.
- B. Shall include any required bolt-on framework apparatus required to comply with the equipment and cabling protection requirement of A., and
- C. Should not exceed 2'-6" in overall width.
- D. Should not exceed 15" in depth (preferred depth range)*
- E. Should not exceed 24" in depth (acceptable depth range)*
- F. Should not require more than 2' 6" of aisle space at the rear and 3' 0" of aisle space at the front for equipment installation and maintenance purposes.

***NOTE:** Equipment depth may impact the ability of equipment to be deployed in AT&T facilities.

- Equipment up to 15" in depth can be readily deployed in existing facilities.
- Equipment up to 24" in depth may be accommodated with moderate impact in existing facilities.
- Equipment over 24" in depth may be very difficult to readily deploy in existing facilities.

11.6. Equipment Alignment

Multi-frame equipment systems should employ the use of a common equipment framework depth to facilitate movement of people and apparatus along equipment aisles. When it is necessary that frameworks of different depths be used, angled frame base transitional hardware shall be included with, or be optionally available for the shallower frames to avoid abrupt changes in equipment framework depths.

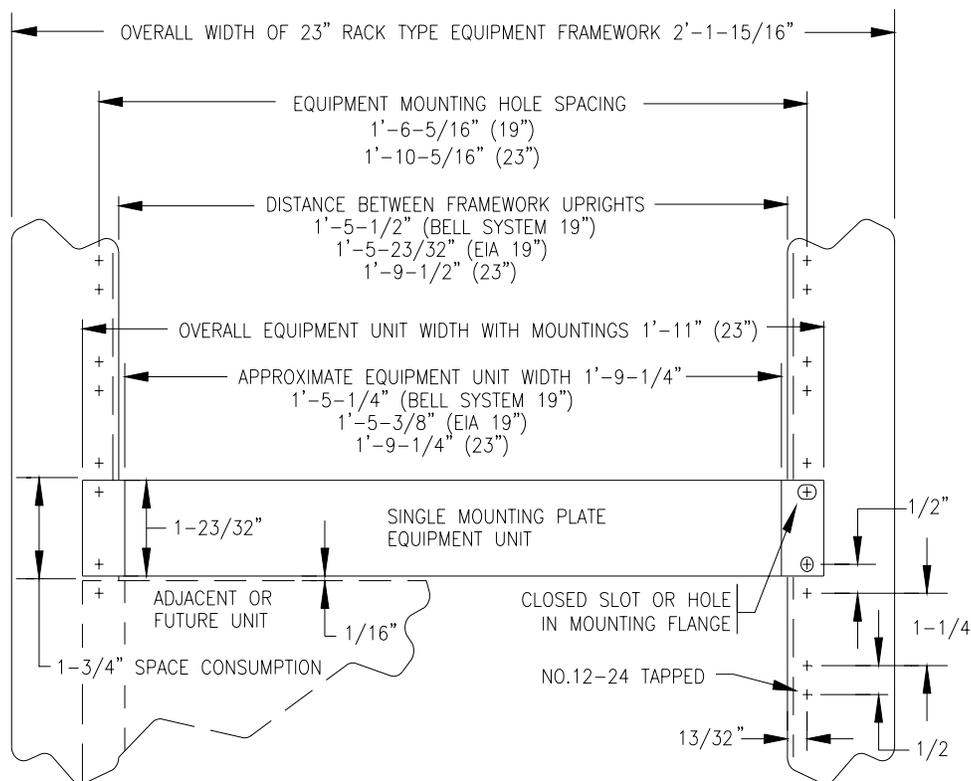
11.7. Equipment Units

Equipment units:

- A. Shall be designed so they are installed from the front and should be cabled from the rear of equipment framework assemblies,
- B. Shall incorporate the use of holes or closed slots for attachment to equipment framework mounting surfaces,

- C. Shall accommodate mounting in equipment frameworks using the 1-3/4 x 23 inch mounting hole pattern shown in Figure 11-1, and
- D. Should accommodate a 2 x 23-inch mounting whole pattern (mounting holes spaced 1 inch apart).

Figure 11 -1 - Commonly Referenced Equipment Spatial Considerations



12. PHYSICAL DESIGN AND MANUFACTURING REQUIREMENTS

Electronic assemblies should meet the physical design and manufacturing requirements of Telcordia GR-78-CORE. If these requirements are not met, supplier shall mark "NO" on the appropriate ESR form and attach documentation detailing which requirements are not met and why they are not met.

13. OUTSIDE PLANT DEPLOYMENT CONFIGURATIONS AND ENCLOSURES

Deployment Configurations

13.1. Deployment Configurations

The configuration of equipment deployed in OSP cabinets shall be approved by OSP staff prior to approval. OSP contact:

Jeff Smith
240 N Meridian St.
Indianapolis, CA 46204
(317)685-2864

OSP Enclosures

13.2. General

This section contains physical requirements for OSP enclosures. Typically each type of enclosure will conform to the physical requirements sections (e.g., rain, sand, salt fog, mold, insects, chemicals, drop test, etc.) of the applicable Telcordia GR. This section does not cover Huts and CEVs. For verification of test requirements for OSP cabinets and other enclosures contact Jeff Smith at (317)685-2864.

NOTE: The Fast Track Process may not be used for OSP enclosure evaluations.

13.3. Generic Pedestal Mounted Electronic Equipment Enclosures

Unless otherwise stated in this section pedestal mounted OSP electronic equipment enclosures will meet the requirements contained in Telcordia GR-487.

13.4. Generic Outside Building Mounted Electronic Equipment Enclosures

Unless otherwise stated in this section OSP electronic equipment enclosures mounted on the outside of buildings will meet the applicable requirements contained in Telcordia GR-950-CORE or GR-49-CORE. Typically this will include NIDs, ONTs, etc. mounted on the outside of single family residences, MDUs and small businesses.

NOTE: When the enclosure contains active electronics, environmental tests must be performed with the exterior of the Network Access Door exposed (i.e. door closed) to the environmental stressors. The ONT must continue to function as designed during and after tests.

13.5. Generic Inside Customer Premises Electronic Equipment Enclosures

Electronic equipment enclosures deployed inside customer premises shall meet:

- A. GR-63-CORE, Issue 3 requirements, Sections 4.2 and 4.7.
- B. GR-1089-CORE, ISSUE 4 requirement Section 7.2.
- C. GR-2890-CORE requirement Section 6

14. Product Information Form Description

14.1. General

This section includes product information forms to help suppliers communicate product information in a way that will facilitate the product evaluation process. These product information forms may be reproduced as necessary. The product information forms shall be completed and provided for new products and for enhanced products for equipment already approved for use in AT&T.

14.2. ESR Forms

The ESR *Equipment Supplier Response* forms are provided so equipment suppliers can effectively communicate product attributes relative to the requirements and objectives contained in this section. A separate ESR form is required for each "product" being evaluated. Suppliers may use a single ESR form for multi-unit products provided that any entries that are not applicable for all units being evaluated are specifically qualified in an ESR attachment.

The following describes how the ESR entries are defined and will be interpreted during the product evaluation process. A response is required to every item in the ESR form.

<u>Column</u>	<u>Description</u>
Item	This is the applicable paragraph number in this section.
Reference	This is the product attribute being addressed in "key-word(s)" form.
Y	An "X" here means the product complies and requested data is being furnished.
N	An "X" here means the product does not comply or the requested data is not being provided at this time. A "No data" response shall be accompanied by an expected date of when the information will be made available.
n/a	An "X" here means that, in the opinion of the supplier, the item is not applicable to the product. Provide an explanation why the requirement is "n/a" for this product.
Att. #	An entry here (alpha, numeric, or combination) identifies the ESR attachment containing the requested data or an explanation of the response entered.

Note: A simple identification system for attachments (e.g. A, B, C...) is preferred, but other schemes are acceptable. When a single attachment is used for more than one ESR item, each entry in the attachment shall be identified using the corresponding ESR item number.

14.3. ESP Forms

The engineering and space planning forms provide a detailed overview of the planning and engineering considerations associated with products being evaluated. *System Equipment* form ESP-001 applies to products comprised of multiple equipment units installed in a predefined configuration. Such products may be furnished preinstalled in an equipment framework assembly (frame level) or as shelf level products (individual units) for installation into existing equipment framework assemblies. *Equipment Unit* form ESP-002 applies to stand-alone shelf level products.

Suppliers shall complete an ESP-001 form for frame level products, each frame of multi-frame products, and for shelf level products that are optionally available preinstalled in an equipment framework assembly. The ESP-002 form shall be completed for individual shelf level products.

14.4. FRM Form

Form FRM-001 *Fire Resistance of Materials* shall be completed by the product supplier's representative having explicit knowledge of the subject addressed. The FRM form may be used for multi-unit products provided each individual unit comprising the product is specifically referenced in the space provided.

15. PRODUCT INFORMATION FORMS:

NOTE: See following pages

15.1. Form ESP-001

EQUIPMENT ENGINEERING & SPACE PLANNING DATA

Equipment Systems ⁽¹⁾

Manufacturer: _____ Product Name: _____ Date: _____

Equip. Functional Description and Nomenclature: _____

Floor Plan Designation: _____ Number of Frames Per System: _____

Names of Associated Frames: _____

PHYSICAL DATA (2)

Overall Dimensions Including Framework: Height: _____ Width ⁽³⁾: _____ Depth: _____

Equipment Weight: –Approximate Installed Weight (fully equipped) _____ lbs _____ lbs.

ENGINEERING DATA (2)

Framework Type/Description: _____

Manufacturer's Identifying Catalog/Part Number: _____

Minimum Aisle Spacing Requirements: Front: _____ Rear: _____

Additional Space Requirements, if applicable, Between This Frame and An:

Adjacent Like Frame: _____ End Guard: _____ Other Frames or Structure: _____

Equipment Locating Restrictions: None ____ Yes (Explain):

120 V ac Required: Yes: ____ No: ____ Circuit Breaker Size per feeder: _____

Number of feeders: ____ -48 V DC Required: Yes: ____ No: ____

Feeder 1 (Load A): List 1 drain: _____ amps at _____ V

List 2 drain: _____ amps at 42.6IV

Feeder 2(Load B): List 1 drain: _____ amps at _____ V

List 2 drain: _____ amps at 42.6IV

Minimum Operating Voltage _____ and current _____ from test in Section 7.4.B

DC-C ____ or DC-I ____ configuration per section 9.8.3 of GR-1089-CORE, Issue 4

EXTERNAL CABLING DATA

Equipment Cabling Plan Reference/Drawing Number: _____

Do Special Cable Or Cabling Requirements Apply: No ____ Yes ____ (Describe):

(1) One form required per each frame of multi-frame system equipment.

(2) All dimensions to be expressed in FEET and INCHES.

(3) Width includes normal 1/16 inch space between adjacent frames.

15.2. Form ESP-002

ENGINEERING & SPACE PLANNING EQUIPMENT DATA
Shelf Level Equipment Units (1)

Manufacturer: _____ Product Name: _____ Date: _____

Unit Functional Description: _____

Product ID: _____ Nomenclature (Acronym): _____

Names of Associated Units per Function: _____

EQUIPMENT DATA

Overall Dimensions (inches): Height: _____ Depth (2): _____ Width: _____

Unit Weight: Unit Installed Weight (fully equipped) _____ lbs

Minimum Aisle Spacing Requirements (feet & inches): Front: _____ Rear: _____

Requires 120 V ac: Yes ___ No ___ Circuit Breaker Size per feeder: _____

Number of feeders: _____ -48 V DC: Yes: ___ No: _____

Feeder 1 (Load A): List 1 drain: _____ amps at _____ V

List 2 drain: _____ amps at 42.6IV

Feeder 2(Load B): List 1 drain: _____ amps at _____ V

List 2 drain: _____ amps at 42.6IV

Minimum Operating Voltage _____ and current _____ from test in Section 7.4.B

DC-C ___ or DC-I ___ configuration per section 9.8.3 of GR-1089-CORE, Issue 4

Heat Baffles Required: Yes ___ No ___ If Yes, Supplied With Unit: Yes ___ No ___

UNIT TO FRAMEWORK MOUNTING DATA

Supported Mounting Flange Hole Patterns: 1 3/4 x 19" ___ 1 3/4 x 23" ___ 2 x 23" ___

Unit Mounts to Front of Framework Uprights: Yes ___ No ___

List Unit Locating Restrictions/Considerations if Any: _____

Distance Unit Extends From Framework Mounting Surface: _____ (in.)

EXTERNAL CABLING DATA

Unit Cabling Plan Reference/Drawing Number: _____

Unit Is Cabled From The Rear: Yes ___ No ___ Front and Rear: _____

Required Alarm Leads and Designations: _____

Do Special Cable Or Cabling Requirements Apply: No ___ Yes ___ (Describe):

(1) One form required per each unit of a multi-unit product/system.

(2) Overall depth includes cable and its supporting apparatus.

Form FRM-001

LETTER OF COMPLIANCE ATTESTING TO FIRE RESISTANCE OF MATERIALS

Manufacturer: _____ Product Name: _____ Date: _____

This statement of compliance applies to the following product(s) which are being considered for purchase:

The below individual having reasonable control over the fire resistance characteristics of materials and components used in the construction and manufacture of the above product(s) assures that:

1. ___ All materials and components, except those listed below, meet the fire resistance requirements contained in the current issue of ANSI T1.307 *Fire Resistance Criteria - Part 1: Ignitability Requirements for Equipment Assemblies, and Fire Spread Requirements for Interconnection Wire and Cable Distribution Assemblies*.
2. ___ Exposed non-metallic apparatus having a surface area $\leq 1 \text{ ft.}^2$ (0.09 m²) have a fire resistance characteristic equivalent to or better than UL-94 V-0.
3. ___ Exposed non-metallic apparatus having a surface area $> 1 \text{ ft.}^2$ (0.09 m²) and a thickness less than 0.18 inches (5 mm) have a fire resistance characteristic equivalent to or better than UL-94 5VA.
4. ___ Exposed non-metallic apparatus having a surface area $> 10 \text{ ft.}^2$ (0.9 m²) have a fire resistance characteristic equivalent to or better than UL-94 5VA and a flame spread rating of 150 as determined by test methods equivalent to UL standard 723 *Test For Surface Burning Characteristics Of Building Materials* or the radiant panel test in U.L. Standard 94.
5. ___ Items 2, 3 and 4 are not applicable to the product(s).

The below non-metallic components (other than LEDs, small cable ties and terminal lug insulators) do not or may not comply with Items 1 through 4 above. The combined weight of the listed components is _____ grams.

Signature

Printed name

Title

15.3. Form ESR-001

Level One
ATT-TP-76200 Minimum Safety Requirements:
CO and Non-CO Deployment Locations

Manufacturer: _____ Product Name: _____ Date: _____

CENTRAL OFFICE DEPLOYMENT											
2. GR-1089 Electromagnetic Compatibility & Electrical Safety Requirements: Note The requirement numbers below are the GR1089 Absolute Requirement Numbers. See GR1089, Paragraph 1.4.1											
R #	Description	Y	N	n/a	Att.#	R #	Description	Y	N	n/a	Att.#
N/A	Equipment Type										
8	Radiated Emissions					41	EUT not meet require.				
9	Radiated Emissions Obj.					54	Class A1 Voltage				
10	Radiated Emissions					55	Class A2 Voltage				
11	Radiated Emissions					56	Class A3 Voltage				
12	Conducted Emissions					57	Class A3 segregtd				
128	Common Mode Emiss.					58	Class A3 Labeled				
14	Unintentional Cond Em					59	Class AB restricted				
20	Manuf. CO switching.					60	Class AB inacces.				
34	Current Limiting Prot.					61	Rubber gloves ...				
22	Listing AC Power					62	Eqpt pwr'd by gen.				
23	Listing Inverters					63	Class B de-energzd				
24	Listing Cust Prem Equip					64	Interrupted/tripped v.				
25	EUT damage					65	Voltage interrupted				
29	EUT Safety Hazard					66	Int./Tripped include				
33	EUT Safety Hazard					67	Peak Voltage				
36	EUT Safety Hazard					68	Sources Com. Wire				
37	Series Type Network					69	Current - 100cm				
137	EUT Safety Hazard					70	Current - 1cm				
39	EUT on Cust. Prem					71	Current measured				
40	EUT Safety Hazard					115	Continuous Source Volt				
						125	EUT Safety Hazard				
Other ATT-TP-76200 Requirements:											
5. Grounding						9. Shock and Vibration					
5.0	GR-1089, Section 9					9.4	Positive Latching				
						9.6	Standard Frames				
6. Thermal						10. Fire Resistance					
C. Heat Dissipation						10.3	Material Compon.				
6.3A1	Heat Dissip. Data ¹					10.4	Panels/Barriers				
6.3A2	Fan forced					10.5	Fire Spread				
6.3A3	Flow front to back					Fire Test Video Included					
6.3A4	Face Temperature					Completed FRM-001 Form					
6.3B	OSP Heat Dissip.										

NON-CENTRAL OFFICE BUILDINGS and OSP:											
	Description	Y	N	n/a	Att.#		Description	Y	N	n/a	Att.#
	NRTL listing						FCC Part 15 ²				

1. Use appropriate ESP form to report this information.
2. Compliance to GR-1089 criteria [8-12, 14,128] referenced in Section 2 above may be accepted in lieu of FCC Part 15 compliance.

15.5. ESR-003-CO

Level Three CO
ATT-TP-76200 Requirements for Equipment Deployed at CO Locations

Manufacturer: _____ Product Name: _____ Date: _____

Item	Reference	Y	N	n/a	Att.#	Item	Reference	Y	N	n/a	Att.#
2 Electromagnetic Compatibility/Electrical Safety						7 DC Power					
2.2	Equipment Type					7.1	Noise Immunity				
2.3	Rad. Emission					7.2A	Under voltage transient				
2.4	Cond. Emission					7.2B	Over voltage transient				
2.5	Immunity					7.2C	Impulse transient				
2.6	Lightning/AC Pwr.					7.3	Current Drain*				
2.7	Steady State Pwr.					7.4	Min. Operating V*				
2.8	Electrical Safety										
2.9	DC Potential					8 Airborne Contaminants					
						8.1	Indoor, GR-63				
						9 Shock and Vibration					
						9.1	Transport				
3 Acoustic Noise						9.2	Vibration				
3.1	Meet GR-63					9.3	Earthquake				
4 Electrostatic Discharge & Fast Transient						9.4	Positive Latching				
4.1	GR-1089,					9.5	Hard Drive Backup				
4.2	GR-1089,					9.6	Standard Frames				
4.3	GR-1089,					9.7	Self Support Frame				
						9.8A	Office Vibration, Indoor				
						9.9	Floor Loading				
5 Grounding											
5.1	GR-1089, Section 9					10 Fire Resistance					
						10.3	Materials & Comp.				
6 Thermal						10.4	Protective Barriers				
6.1 Temperature and Humidity						10.5	Fire Spread				
6.1A	Indoor, GR-63					Fire Test Video Included: Completed FRM-001 Form					
6.2 Altitude						11 Spatial					
6.2A	Indoor GR-63					11.4	Switching Systems				
						11.5	Other Systems				
						11.6	Other Eqpt. 7'-0"				
6.3. Heat Dissipation						11.7	Equipment Unit				
6.3A1	Heat Dissip. Data*					12 Physical Design and Manufacturing					
6.3A2	Forced Air Cooled					12.1	GR-78				
6.3A3	Flow Front to Back										
6.3A4	Face Temperature										

* Use appropriate ESP form to report this information.

15.6. ESR-003-NCO

Level Three NCO
ATT-TP-76200 Requirements for Equipment Deployed at Buildings Other Than
Central Offices and Mission Critical Data Rooms¹

Manufacturer: _____ Product Name: _____ Date: _____

Item	Reference	Y	N	n/a	Att.#	Item	Reference	Y	N	n/a	Att.#
						7 DC Power (if applicable)					
						7.1	Noise Immunity				
						7.2A	Under voltage transient				
2 Electromagnetic Compatibility/Electrical Safety						7.2B	Over voltage transient				
2.2	Equipment Type					7.2C	Impulse transient				
2.3	Rad. Emission					7.3	Current Drain*				
2.4	Cond. Emission					7.4	Min. Operating V*				
2.5	Immunity										
2.6	Lightning/AC Pwr.					8 Airborne Contaminants					
2.7	Steady State Pwr.					8.1	Indoor, GR-63				
2.8	Electrical Safety										
2.8	NRTL Listing (required)					9 Shock and Vibration					
2.9	DC Potential					9.1	Transport				
3 Acoustic Noise						9.2	Vibration				
3.1	Meet GR-63					9.3	Earthquake				
4 Electrostatic Discharge & Fast Transient						9.4	Positive Latching				
4.1	GR-1089, Sec 2.1.2					9.5	Hard Drive Backup				
4.2	GR-1089, Sec 2.1.2.4					9.6	Standard Frames				
4.3	GR-1089, Sec 2.2					9.7	Self Support Frame				
						9.8A	Office Vibration, Indoor				
						9.8B	Office Vibration, OSP				
						9.9	Floor Loading				
5 Grounding						10 Fire Resistance					
5.1	GR-1089, Section 9					10.3	Materials & Comp.				
6 Thermal						12 Physical Design and Manufacturing					
6.1 Temperature and Humidity						12.1	GR-78				
6.1A	Indoor, GR-63										
6.2 Altitude											
6.2A	Indoor GR-63										
6.3. Heat Dissipation											
6.3A1	Heat Dissip. Data ²										
6.3A4	Face Temperature										

- NOTE: Equipment intended for deployment in both CO and non-CO locations must be compliant to both Level 3 CO & NCO requirements
- Use appropriate ESP form to report this information.

15.7. ESR-003-OSP

Level Three OSP
ATT-TP-76200 Requirements for Equipment Deployed in Outside Plant

Manufacturer: _____ Product Name: _____ Date: _____

CLASS 2 & 3 ¹ OSP ELECTRICAL COMPONENT REQUIREMENTS ²											
Item	Reference	Y	N	n/a	Att.#	Item	Reference	Y	N	n/a	Att.#
2 Electromagnetic Compatibility/Electrical Safety						6.3. Heat Dissipation					
2.2	Equipment Type					6.3B	GR-3108, Section 4.1 ³				
2.3	Rad. Emission										
2.4	Cond. Emission					7 DC Power					
2.5	Immunity					7.1	Noise Immunity				
2.6	Lightning/AC Pwr.					7.2A	Under voltage transient				
2.7	Steady State Pwr.					7.2B	Over voltage transient				
2.8	Electrical Safety					7.2C	Impulse transient				
2.9	DC Potential					7.3	Current Drain*				
						7.4	Min. Operating V*				
3 Acoustic Noise						8 Airborne Contaminants					
3B	GR-487, Section 3.29					8.2	OSP, GR-3108				
4 Electrostatic Discharge & Fast Transient						9 Shock and Vibration					
4.1	GR-1089 Section 2					9.1 B	Transport & Handling				
5 Grounding						9.2	Vibration				
5.1	GR-1089, Section 9					9.3	Earthquake				
6 Thermal						9.4	Positive Latching				
6.1 Temperature and Humidity (pick applicable rqmt)						9.5	Hard Drive Backup				
6.1B	GR-3108, Section 4					9.7	Self Support Frame				
6.1C	GR-3108, GR-487					9.8B	Office Vibration, OSP				
6.2 Altitude						10 Fire Resistance					
6.2B						10.5C	GR-3108, Section 6.5.				
						12 Physical Design and Manufacturing					
						12.1	GR-78				

1. Equipment must conform to requirements applicable to Class of Environment intended for deployment
2. Equipment intended for deployment in both CO and OSP locations must be compliant to both Level 3 CO & OSP requirements
3. Use appropriate ESP form to report this information.

NOTE: The configuration of equipment deployed in OSP cabinets must be approved by OSP staff prior to approval for use. See paragraph 12.1 of this document.

OSP ENCLOSURES (select applicable requirement)											
Item	Reference	Y	N	n/a	Att.#	Item	Reference	Y	N	n/a	Att.#
Pedestal & Pole Mounted Enclosures						Inside Customer Premises Equipment Enclosures					
13.2	GR-487, Section 3					13.4A	GR-63, 2, 4.4, & 2.7				
Outside Building Mounted Enclosures						13.4B	GR-1089, Section 7.2				
13.3	GR-950, Section 5										
13.3	GR-49, Section 5										

15.8. Form ESR-ANC

Ancillary Equipment
Level 1¹ and Level 3 ATT-TP-76200 Requirements

Manufacturer: _____ Product Name: _____ Date: _____

Item	Reference	Y	N	n/a	Att.#	Item	Reference	Y	N	n/a	Att.#
2. Electromagnetic Compatibility/Electrical Safety						7. DC Power					
2.2	Equipment Type					7.1	Noise Immunity				
2.3	Rad. Emission					7.2A	Under voltage transient				
2.4	Cond. Emission					7.2C	Over voltage transient				
						7.2E	Impulse transient				
2.5	Immunity					7.3	Current Drain*				
2.6	Lightning/AC Pwr.					8. Airborne Contaminants					
2.6	Fault Testing					8.1	Indoor, GR-63				
2.7	Steady State Pwr.					8.2	OSP , GR-3108				
2.8	Electrical Safety										
						9. Shock and Vibration					
						9.2	Vibration				
4. Electrostatic Discharge						9.3	Earthquake				
4.1	GR-1089, Sec 2.1.2					9.8	Office Vibration				
4.2	GR-1089, Sec 2.1.2.4										
4.3	GR-1089, Sec 2.2					10. Fire Resistance					
						10.3	Materials & Comp.				
5. Grounding						10.4	Protective Barriers				
5.1	DC Short Circuit					10.5	Fire Spread				
5.1	AC Short Circuit										
						Fire Test Video Included:					
						Completed FRM-001 Form					
6. Thermal											
6.1 Temperature and Humidity											
6.1A	Indoor, GR-63										
6.1B	OSP , GR-3108										
6.3 Heat Dissipation											
6.3A1	Heat Dissip. Data ²										
6.3A2	Forced Air Cooled										
6.3A3	Flow Front to Back										
6.3A4	Face Temperature										

NOTE:
Some tests may not be required if circuit packs can be demonstrated to be similar to original circuit packs in construction. See Appendix B.

1. Level 1 Ancillary requirements are shaded in gray
2. Use appropriate ESP form to report heat dissipation data.

16. APPENDIX A

ATT-TP-76200 PRODUCT EVALUATION PROCESS

16.1. Purpose

The purpose of this appendix is to assist product suppliers with preparing and furnishing equipment documentation to the company representative for product evaluation purposes.

16.2. Types of Evaluations

An evaluation reviews a product against all applicable requirements based on the equipment and its intended use in the network. . Unless otherwise stated, all requirements apply to equipment systems and equipment units that will be installed in network equipment buildings and equipment areas within buildings, electronic equipment enclosures such as controlled environment vaults, outside mounted electronic equipment cabinets, and at customer locations.

Documentation supporting compliance is required for a complete product evaluation. Documentation includes test reports and product information verifying compliance for each applicable requirement. Below are the three types of complete evaluations. The requirements for each type are contained in their corresponding ESR forms:

- A. LEVEL ONE (ESR-001). Level One refers to an evaluation against the minimum acceptable set of requirements necessary to protect personnel and the Network. Conformance to Level One requirements must be verified before equipment may be placed in a network equipment environment. Level One requirements are generally applicable to collocated equipment, portable test and monitoring equipment, and equipment trials.
- B. LEVEL TWO (ESR-002) Level Two refers to an evaluation against Level 3 – NCO requirements with some environmental reliability requirements modified to account for equipment placed only in Mission Critical Data Rooms.
 - Mission Critical Data Room Requirements:
 - Compliant to TIA-942, Telecommunications Infrastructure Standard for Data Centers, including:
 - Dedicated HVAC with HVAC back-up
 - Temperature range 20°C to 25°C
 - Humidity range 40% – 55% RH
- C. LEVEL THREE - CO (ESR-003-CO). Level Three - CO refers to an evaluation against all safety and environmental reliability requirements for equipment placed in central offices. Conformance to Level Two – CO requirements is required for network equipment approval and deployment.
- D. LEVEL THREE – NCO (ESR-003-NCO). Level Three - NCO refers to a subset of ATT-TP-76200 Level Three – CO safety and reliability requirements applicable for equipment located exclusively in non-central office equipment spaces (e.g. Data Rooms, Customer Premises).

- E. LEVEL THREE – OSP (ESR-003-OSP). Level Three - OSP refers to ATT-TP-76200 safety and reliability requirements applicable for equipment located in the Outside Plant.
- F. ANCILLARY (ESR-ANC). Ancillary is an evaluation against a minimum set of requirements applicable to products previously approved by AT&T Services that have undergone one or more changes.
- G. PORTABLE TEST SET. At a minimum, portable test sets will be reviewed to the following requirements prior to deployment: Electrical Safety Review: An electrical safety review is necessary when the output voltage of the equipment exceeds 140 volts DC or 50 volts rms AC. Radiated Emissions: A review is necessary when the equipment supplier cannot certify compliance to FCC Part 15. In the absence of FCC Part 15 compliance, the radiated emissions requirements and test methods of GR-1089, Section 3 shall apply. Portable test sets that do not exceed 140 volts DC or 50 volts rms AC and are certified compliant to FCC Part 15, may be considered in compliance with the electrical safety and radiated emissions requirements and do not require review by the NEBS group.
- H. PRODUCT CHANGE NOTICE (PCN). PCNs must be evaluated for their effect on the equipment's ATT-TP-76200 compliance.

- When it is determined by the manufacturer, using sound engineering judgment, that a hardware or software change does not impact the equipment's ATT-TP-76200 compliance, the manufacturer may submit a letter of attestation to this effect using the form in paragraph 15.6. When the PCN is judged to affect compliance to some requirements, but not all, use form ESR-002 to identify each. For requirements for which compliance is determined not to be affected, mark the "Y" column, for requirements that require testing mark the "N" column and annotate with a brief test plan and status. AT&T Services will review the documentation submitted and determine if more documentation and/or testing are required.

NOTE: Except for requirements where it is obvious that the PCN will not affect the equipment's compliance, AT&T Services recommends that a third party, independent laboratory evaluate whether testing is necessary to verify compliance.

- When it is determined by the manufacturer, a test lab or AT&T Services that the PCN may affect the equipment's ATT-TP-76200 compliance, the modified equipment must be tested per ATT-TP-76200. Documents verifying compliance to ATT-TP-76200 Ancillary Requirements (ESR-ANC) must be submitted for AT&T Services evaluation as detailed in the Product Evaluation Documentation section of this appendix.

PRODUCT EVALUATION DOCUMENTATION

Documentation verifying that the product has been tested and conforms to applicable ATT-TP-76200 requirements must be submitted to the company representative. There are two acceptable processes for supplying documentation verifying conformance:

16.3. *Test Report Documentation Package*

Product information shall be assimilated in an organized fashion and provided to the company representative. A cover memo identifying included documentation should be included as a matter of convenience to facilitate the evaluation process. If available, informative product awareness brochures should also be provided but are not required.

A. Test Report Details

Relative to product test reports, AT&T Services accepts test reports from any testing facility adequately equipped and capable of performing the required tests in a professional manner under the requirements noted in paragraph 1.12 of this Section. At a minimum, test reports shall contain the following information:

- Test report number
- Description of Equipment Under Test (EUT), including specific test configuration
- Location and date of test
- Description of test equipment
- Calibration dates of test equipment
- Protocol of test with stated pass/fail criteria
- Test result data
- Assessment of whether equipment passed or failed the test
- Detailed notes on any anomalies during test procedure
- Detailed notes on any modifications made to the equipment in order to pass the test and detailed plans to incorporate the modifications into the final product.

Note: If the documentation is being submitted electronically or via CD disk, the file name or file folder shall clearly identify the file's contents (e.g. GR-63 test data). Reference the file name in the "Doc" cell for applicable requirements.

B. ATT-TP-76200 Forms

Each documentation package shall include an appropriate Equipment Supplier Response form (ESR) that corresponds to the type of evaluation being requested or anticipated.

For each type and level of evaluation the following forms shall be submitted:

- Level One: Completed forms ESR-001, ESP-001 or ESP-002, FRM-001, and applicable test report documentation shall be submitted for review.
- Level Two: Completed forms ESR-002, ESP-001 or ESP-002, FRM-001, and all test report documentation shall be submitted for review. An indication of planned testing shall be indicated for any product tests not yet performed

- Level Three - All: Completed forms ESR-003-NCO, ESP-001 or ESP-002, FRM-001, and all test report documentation shall be submitted for review. An indication of planned testing shall be indicated for any product tests not yet performed.
- Ancillary: Completed forms ESR-ANC, FRM-001, applicable test report documentation, and/or a description of product revisions shall be submitted for review.

NOTE: Product will not be approved for use without receipt of correct completed forms.

C. AT&T Services Documentation Package Evaluation Process

- The AT&T Services Common Systems Product Evaluation group will review the product Documentation Package. If the product cannot be evaluated as compliant to all applicable requirements, an Initial Letter will be sent to the company representative specifying the areas that are not evaluated in conformance and what further action is required of the product supplier.
- Upon receipt of the Initial Letter, the product supplier may forward supplemental data to or contact the company representative, the AT&T Services Product Evaluation Group Coordinator or a specific SME regarding non-compliance resolution. Contact information for the Group Coordinator and SMEs is contained in the Initial Letter. Documentation, either electronic or hard copy, forwarded to AT&T Services containing supplemental data in response to an Initial Letter should identify the contents of documentation and reference the Product Log number assigned to the product, the SME who requested the data and the non-compliance requirement the data is addressing.
- The SME(s) who requested the documentation will evaluate supplemental data forwarded to AT&T Services by the product supplier. If the supplemental data is sufficient to allow all open areas to be evaluated as in conformance to applicable requirements, a Final Letter will be sent to the company representative notifying them that the product conforms to requirements. If there are still open items after supplemental data has been reviewed, a Product Evaluation Status letter will be sent to the company representative giving the status of the product and what further action the product supplier needs to take.

16.4. AT&T Services Product Evaluation Fast Track Process

AT&T Services has established a fast track process it will use for certain business opportunities to streamline equipment evaluations and shorten time-to-market intervals. The process consists of AT&T Services accepting ATT-TP-76200 compliance Letters of Attestation and minimal product information from equipment suppliers in lieu of the Test Report Documentation Package described above.

A. ATT-TP-76200 Fast Track General guidelines:

- 1) The process is an optionally agreed upon business arrangement between AT&T Services and an equipment supplier.
- 2) A supplier must have successfully participated in the Test Report Documentation Package process at least once to be eligible for the fast track process.

- 3) AT&T Services reserves the right to review any and all test documentation cited in the Letter of Attestation during the time the equipment is an integral component of AT&T's network.
- 4) Test documentation cited in the Letter of Attestation must be made available to AT&T Services within 20 business days upon receipt of a written request.
- 5) AT&T Services may take any or all of the following actions for products approved for use via a Letter of Attestation that are subsequently found not to conform to applicable ATT-TP-76200 requirements:
 - Suspend further purchase of the product.
 - Require previously purchased products be brought into compliance.
 - Suspend the supplier's further use of the Fast Track process.
 - Hold the supplier liable for any damages directly resulting from the product's failure to conform to applicable requirements.
- 6) The equipment must have been tested and found in conformance to **ALL** applicable requirements. **The Fast Track Process will not be accepted if any requirement is not met or is conditionally met.**
- 7) The Fast Track process may NOT be used if the equipment contains integrated protectors.
- 8) The Fast Track process may NOT be used for OSP enclosures.

B. AT&T Services Product Evaluation Fast Track Process Procedure for Product Suppliers

- 1) Verify with the company representative that the Fast Track process is appropriate for the product/project.
- 2) Complete all applicable tests required by ATT-TP-76200.
- 3) Review and verify the product's conformance to **ALL** applicable requirements.
- 4) Complete and submit the Letter of Attestation that is applicable for the Type of Evaluation (i.e., Level 1, Level 2, Level 3 or Ancillary). A template for the letter is contained in Attachment 1. All of the information requested in the applicable template must be completed. The Letter of Attestation must be signed at director level or above and notarized.
- 5) Complete and submit appropriate ESR Form
- 6) Complete and submit either form ESP-001 or ESP-002, whichever is applicable for the product.
- 7) Complete and submit form 16.4.1, Fast Track Report Form

16.4.1 Fast Track Report Form

AT&T SERVICES FAST TRACK REPORT

If the request use of the Fast Track program, this form must be submitted with a complete description of the equipment's design and function. Manufacturer's documents such as brochures may be attached for reference when applicable.

Equipment vendor name:

Equipment model:

Does equipment have optical components? Yes No

Equipment Port Types (Port Type shall be determined using GR-1089, Appendix B).

General technology description (e.g. DSLAM, DLC, etc.) including drawings, pictures, etc.:

Detailed description of functionality:

16.5. Letter of Attestation

AT&T SERVICES LETTER OF ATTESTATION

Equipment Compliance to AT&T Services Technical Publication ATT-TP-76200 Requirements

(Company name) hereby asserts, to the best of its knowledge, and pursuant to the information contained in the test reports identified herein, that the equipment listed below has been tested and found compliant to **ALL** applicable AT&T LEC Technical Publication ATT-TP-76200 requirements as indicated below.

Equipment vendor name:

Equipment model:

Name of test Facility/internal organization performing tests:

Date of test report(s):

Test report number(s):

Mark the ATT-TP-76200 Requirements to which the equipment conforms.

Requirements met for Level:

- One
- Two
- Three
- Ancillary
- TP 76450

Requirements met for Deployment in:

- Central Office
- MC Data Room¹
- NCO²/Customer Prem
- Outside Plant Class 2
- Outside Plant Class 3
- Outside Plant Unprotected

Additional Information

If equipment is intended for use at Customer Premises is it listed for that purpose by a Nationally Recognized Testing Laboratory (NRTL)? Yes No

Has this equipment been modified in any manner to meet requirements? Yes No
If yes, disclose any modification used in testing to the equipment which are necessary to meet ATT -TP-76200 requirements (use page 2 if necessary)

Is shielded cable required to meet GR-1089, Section 4.6.9? If so, explain. Yes No
(use page 2 if necessary)

Does equipment have integrated protectors? Yes No
If yes, the Fast Track Process may not be used, full test reports must be submitted for evaluation.

1. Mission Critical Data Room - Dedicated Data Room compliant to TIA-942, Telecommunications Infrastructure Standard for Data Centers, including:
 - o Dedicated HVAC with HVAC back-up
 - o Temperature range 20°C to 25°C
 - o Humidity range 40% – 55% RH
2. Non-central office

Page 2 of AT&T Services Letter of Attestation

(Company name) agrees that statements made in this letter may be audited by AT&T Services via a review of compliance confirmation data (the reports listed above), and that this data will be made available to AT&T Services within 20 business days of request. If the above equipment is determined to not meet AT&T Services requirements as attested to, __ (company name) __ acknowledges and agrees that, at its expense, it will remedy any such non-compliance in accordance with the terms of the contract under which the equipment was evaluated/purchased and/or licensed. .

(Company name) has caused this Letter of Attestation to be executed by its duly authorized representative as of the date written below.

(Company name)

By: _____

Title: _____

Date: _____

NOTE: This affidavit must be signed in front of a notary and notarized

Contact information to request test reports: Name: _____

Phone number: _____

Disclosure of modifications used to this equipment which are necessary to meet ATT -TP-76200 requirements:

If shielded cable required to meet GR-1089, Section 4.6.9 explain:

16.6. Product Change Notice Statement

LETTER OF ATTESTATION - PCN

Equipment Compliance to AT&T Services Technical Publication ATT-TP-76200 Requirements

(Company name) hereby asserts, to the best of its knowledge, and pursuant conclusions drawn from sound engineering judgment, that the PCN described below has been evaluated as having no significant impact to the compliance of the equipment listed below to **ALL** applicable AT&T LEC Technical Publication ATT-TP-76200 requirements, except as noted below.

Equipment vendor name:

Equipment model PCN is for:

PCN Number:

Description of PCN:

ATT-TP-76200 requirements NOT COVERED by this document (

Describe the engineering justification for concluding the PCN will not affect ATT-TP-76200 compliance:

(Company name) has caused this Letter of Attestation to be executed by its duly authorized representative as of the date written below.

By: _____

Title: _____

Date: _____

Phone number: _____

17. APPENDIX B

ATT-TP-76200 PRODUCT CHANGE TEST GUIDELINES

17.1. *Purpose*

The purpose of this appendix is to provide product suppliers a guide to help determine what tests may not need to be performed on a product enhancement to verify conformance to ATT-TP-76200 Ancillary requirements.

17.2. *General*

Some product enhancements are so minor that a complete retest of the product may not be necessary. Typically, when a product supplier requests a re-test waiver to run tests on product enhancements, data comparing the new product to the existing product is submitted to the company representative for evaluation by AT&T Services. Depending on the product under review, this data may include pictures, fire load data, descriptions of electrical components, etc. Each AT&T Services product evaluation subject matter expert (SME) then reviews this data and responds with an assessment of what tests are required. **This Appendix is a guideline only. It is the product suppliers' responsibility to satisfactorily document that the new product conforms to applicable requirements.** This Appendix only applies to product enhancements to equipment previously evaluated as in conformance to applicable ATT-TP-76200 requirements and approved for use in AT&T.

Software upgrades/changes shall be evaluated if it has involves:

- Additional or revised hardware
- Activation of previously unused hardware
- An increase in the amount of power supplied to the hardware

17.3. *Retest Guidelines by ATT-TP-76200 Sections*

A. Section 2, Electromagnetic Compatibility

Electromagnetic Interference – Emission & Immunity (ATT-TP-76200 Req. 2.04 – 2.09)

- Equipment suppliers should reassess or retest their equipment's Emissions and Immunity performance in accordance with GR-1089 CORE, Section 3.4.7. . As part of their reassessment, equipment supplier shall consider the effects of software changes on the Emissions and Immunity performance of their equipment.

Lightning, AC Power Faults, Steady State Power Induction, Electrical Safety & DC Potential Difference (ATT-TP-76200 Req. 2.10 – 2.20).

- Equipment supplier's should reassess or retest their equipment's performance for Lightning, AC Power Faults, Steady State Power Induction, Electrical Safety & DC Potential Difference whenever materials, components, circuit layout or accessibility is changed. . Equipment should be reassessed or retested when changes in software activate hardware not previously active or affect the equipment's ability to the EMC requirements of ATT-TP-76200 (Req. 2.10 - 2.20). The equipment's reassessment or retesting may include all of the technical requirements in these sections of ATT-TP-76200. However, the reassessment or retesting is usually limited to only those technical requirements effected by the change in the equipment.

B. Section 3, Acoustic Noise (ATT-TP-76200 Req. 3.01 – 3.03)

- Equipment suppliers should reassess or retest their equipment's Acoustic Noise performance when a change is made to the equipment's fan design, fan control system or a change in the number of fans within the equipment.

C. Section 4, ESD

- Subsystems should be tested whenever changes are introduced that may alter ESD susceptibility. Such changes may include a modified printed wiring board, new components additional components, changes to the power supply, additional telecommunications ports, changes in chassis design, software activation of existing hardware or increased clock speed.

D. Section 5, Grounding

- The only Grounding requirements for Ancillary equipment are the short circuit tests. Embedded ac or dc power supplies should be tested whenever changes are introduced that could alter these. Such changes may include a modified printed wiring board, new components or additional components, changes to the power supply, additional telecommunications ports, changes in chassis design, software activation of existing hardware or increased clock speed.

E. Section 6, Thermal

Temperature and Humidity

If the new product is significantly different from existing compliant products (e.g., different sub components, wiring, spacing, etc.) the previous test data may not be applicable to the new product. In order to be allowed to forego temperature and humidity testing on a new product, the product supplier needs to demonstrate to AT&T Services that the new product is physically almost identical to the existing compliant product. This may be done via photographs, written descriptions, statements, etc.

Heat Dissipation

Heat dissipation should be recalculated whenever a change is introduced that changes the power usage of the unit.

F. Section 7, DC Power

The product supplier may perform an analysis, using good engineering based on similarities to the existing product, predicting the probable conformance of the new product to Ancillary DC Power requirements. This analysis should consider similarities and differences of electric components, wiring, and power levels. The analysis shall be submitted to the company representative for review and approval by AT&T Services.

G. Section 8, Airborne Contaminants

In reference to Airborne Contaminants testing, Telcordia GR-1274-CORE, states that "The qualification test shall be passed once for each new family of printed wiring assemblies." Based on Telcordia's assessment, new assemblies for enhanced products need not be tested for airborne contaminants if they meet the criteria for the same design family of printed boards, defined as follows:

- *A design family consists of printed wiring boards from the same manufacturer; using the same design rules for minimum line spacing and maximum electric field, and using components that require the same bias voltages. Within the same design family, boards shall have the same finish, i.e. they shall all be bare or all be coated with the same overcoat.*

If the product supplier does not test some or all of the printed wiring boards in an enhanced product, they shall supply a statement affirming that the board(s) not tested meets the definition for being in the same design family of a product previously approved for use in AT&T. Documentation verifying the conformance of the tested card must be submitted for review.

H. Section 9, Shock and Vibration

Equipment should be tested whenever changes are introduced that could alter the physical integrity of the unit.

I. Section 10, Fire Resistance:

Reasons for Reassessment

Generally, products that have been determined to be acceptable for purchase from a fire resistance perspective do not have to be re-evaluated or retested unless subsequent changes to the product include one or more of the following:

- 1) A change in the manufacturer's unique product identifier.
- 2) A modification to an equipment assembly's enclosure that increases ambient air circulation.
- 3) The addition of integral or separately mounted cooling fan(s) or a manufacture's requirement or recommendation that fans be used with the equipment.
- 4) The substitution of metallic apparatus with combustible material.
- 5) A change in an equipment assembly's electrical protection circuitry that increases the ampere rating of an overload protection device or affects the operational characteristics of a cooling fan.
- 6) The addition of printed circuit board(s) to one or more existing printed circuit board.
- 7) The addition of vertically oriented printed circuit boards to the extent that overall circuit board surface area within the unit is increased by 300 cm^2 (46.5 in.^2).
- 8) Evolution of plug-in circuit packs used in a product makes it questionable whether the product accurately resembles its original test configuration.