



## **ATT-TP-76200**

# **NETWORK EQUIPMENT POWER, GROUNDING, ENVIRONMENTAL, AND PHYSICAL DESIGN REQUIREMENTS**

**To:** Telecommunications Equipment Suppliers

**Effective Date:** See paragraph 1.20.  
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**Related Documents:** Telcordia GR-63-CORE, ISSUE 3, GR-1089-CORE, ISSUE 4, GR-78CORE, ANSI T1.307, T1.315, T1.319, and T1.329

**Cancelled Documents:** AT&T Services, Inc., ATT-TP-76200, Issue 12, August 11, 2006, AT&T Corp. Inc., ATT 801-900-160, Network Equipment Design Standards (NEDS), Issue 5, Bell South Telephone TR73638BT, NEBS Compliance Handbook, Issue 1.

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## 1 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.

### **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 for 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 (CO)** - 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 (OSP)** – 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** refers to an internal environment typical of GR-487 non-compliant remote cabinets, per Telcordia GR-3108-CORE.
  - **OSP Unprotected** refers to an open, unprotected environment such as ONTs, and 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\*

	<b>Level One</b>	<b>Level Two</b>	<b>Level Three</b>	<b>Ancillary</b>
<b>Central Office</b>	ESR-001	n/a	ESR-003-CO	ESR-ANC
<b>Non-CO Building</b>	ESR-001	n/a	ESR-003-NCO	ESR-ANC
<b>MC Data Room</b>	ESR-001	ESR-002	ESR-003-NCO	ESR-ANC
<b>OSP Class Two</b>	ESR-001	n/a	ESR-003-OSP	ESR-ANC
<b>OSP Class Three</b>	ESR-001	n/a	ESR-003-OSP	ESR-ANC
<b>OSP Unprotected</b>	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. AT&T Test Laboratory Entry Requirements**

The primary purpose of lab entry requirements for equipment under test are to ensure the safety of personnel and property. It is the objective of this requirement that verification of compliance to industry safety standards be provided for equipment prior to lab entry. However, due to needs of the business and the fact that the lab is staffed by personnel trained to work with prototype equipment, there are times when it may be necessary for AT&T to allow equipment into its lab that has not been verified in compliance to safety standards. In those cases it is incumbent upon the manufacturer to assure the equipment is safe to operate. AT&T labs will assess acceptance and test protocols for this equipment on a case-by-case basis.

- A. Objective: Prior to entry into AT&T labs, equipment should be compliant to ATT-TP-76200 Central Office Level 1 requirements, or Non-Central Office Level 1 requirements, or be Listed (e.g. UL 60950).
- C. Requirement: If equipment does not meet the above objective, the manufacturer shall submit a notarized Letter of Attestation (LOA) that the equipment meets industry electrical safety, electromagnetic emissions and fire safety standards

**NOTE:** The above requirements are applicable only for AT&T laboratory testing. All applicable ATT-TP-76200 and ATT-TP-76450 requirements must be evaluated as in conformance prior deployment into the network.

### **1.11. 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.

### **1.12. 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.

### **1.13. 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 Duane B. Arnold (817)370-4004, e-mail [ba5811@att.com](mailto:ba5811@att.com).

### **1.14. 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.

### **1.15. 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 undergo 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 ESP 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.

### **1.16. 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/>.

### **1.17. Laboratory Accreditation Requirements**

For tests completed after January 1<sup>st</sup>, 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. Testing performed outside of the United States by a non-accredited laboratory or manufacturer's performed testing may be accepted if witnessed by a U.S. Nationally Recognized Testing Laboratory.
- 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.

### **1.18. 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-TP-76450. This document may be obtained from the AT&T Services internet web site at <https://ebiznet.sbc.com/sbcnebs/>.

## 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/>.

### **1.19. 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.

### **1.20. Reasons for Reissue**

Changes to Issue 12:

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.

- 1.17 Laboratory Accreditation Requirements
- 2.6 Lightning and AC Power Faults, OSP Port Type
- 7.0 - Section 7, DC Power, into paragraph
- 15.4 Form ESR-002, 1.2, 12.2B
- 15.5 Form ESR-003-CO, 12.2B
- 15.5 – 8. Airborne Contaminants: 8.3 Fan Filters
- 15.6 Form ESR-003-NCO, 12.2B
- 15.7 Form ESR-003-OSP, 12.2B
- 15.8 Form ESR-ANC, 1.2, 12.2B
- 15.10 – Form Page 1, and 2
- 16 .Appendix A, 16.3 Documentation packages updated

### **1.21. Effective Date of this Issue**

Compliance to new or modified requirements added to this issue of ATT-TP-76200 will be required immediately

### **1.22. 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.

D. 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.

Outside Plant Equipment placed at a customer premises, such as an ONT or iNID, shall have the electrical ports that interface with CPE defined as follows:

Ethernet or coax – Type 4 for both lightning and AC power fault  
POTS – Type 3 for lightning, Type 4 for AC power fault

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 shall 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:

1. Requirements in Sections 4.2 through 4.5 of Telcordia GR-3108-CORE.

NOTE: Equipment that requires internal fan-cooling must conform to these requirements during short-term temperature excursions associated with fan failure (GR-3109, Sec 1.5). To demonstrate compliance, the last cycle (Steps 11 through 14) of the Temperature and Humidity Cycling Test described in Sec 4.5 of GR-3108 must be repeated with one fan disabled.

2. Requirements in Section 4.8 of Telcordia GR-418-CORE, Issue 2 with the following exceptions, revisions and additions:
  - a. The test configuration must be agreed to by AT&T before start of test.
  - b. During test, key parameters shall be monitored per Telcordia GR applicable to the specific technology under test and/or vendor specifications.
  - c. Objective 04-76 is a requirement.
  - d. Objective 04-77 is a requirement.
  - e. Ramp rate fro requirement R4-78 shall be 35C/hr:
  - f. Objective O4-79 is not accepted by AT&T.
  - g. Requirement R4-80 is not accepted by AT&T.
  - h. Requirement R4-99: Section referenced in parenthesis shall be Section 4.8.4, not 4.4 (corrects typographical error in GR)..
  - i. Requirement R4-100: Equipment shall run alarm free throughout test.
  - j. Objective 04-102 is a requirement.

### 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:

1. Requirements in Telcordia GR-3108-CORE, Sections 4.2 through 4.5.

Note: 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.

2. Requirements in Section 4.8 of Telcordia GR-418-CORE, Issue 2 with the following exceptions, revisions and additions:
  - a. The test configuration must be agreed to by AT&T before start of test.
  - b. During test, key parameters shall be monitored per Telcordia GR applicable to the specific technology under test and/or vendor specifications.
  - c. Objective 04-76 is a requirement.
  - d. Objective 04-77 is a requirement.
  - e. Ramp rate for requirement R4-78 shall be 35C/hr:
  - f. Objective 04-79 is not accepted by AT&T.
  - g. Requirement R4-80 is not accepted by AT&T.
  - h. Requirement R4-99: Section referenced in parenthesis shall be Section 4.8.4, not 4.4 (corrects typographical error in GR)..
  - i. Requirement R4-100: Equipment shall run alarm free throughout test.
  - j. Objective 04-102 is a requirement.

### 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.

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

The OSP equipment heat dissipation data described in GR-3108, Section 4.1 shall 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 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 most recent American National Standards Institute (ANSI) publication ANSI T1.315\*. Test reports showing conformance to all objectives in GR-1089-CORE Section 10 will be accepted as demonstrating conformance to respective requirements in 7.1 through 7.9 of this Section (ATT-TP-76200 Section 7) Section 7.10 and 7.11 are required in addition to the GR requirements for equipment intended to be installed in a dual power plant environment as previously required by AT&T NEDS and now covered by this standard.

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.

C. The requirements in this section are for nominal -48 VDC Network Elements operating in a steady state voltage range of -40 VDC to 56.7 VDC per Table 1 of ANSI T1.315.

\*ANSI T1.315 is due to be republished in the summer of 2007. The requirements contained in this document will be applicable on 1/1/2008, the effective date of ATT-TP-76200.

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

Unless otherwise stated, all requirements shall apply to the dc power input terminals of the telecommunications load equipment. Although systems vary in architecture, all tests in this standard shall be performed with the minimum number of power supply modules installed in the system that can be utilized in practice (except for the noise return tests). For instance if a system has a redundant power supply module(s), all the redundant supply modules shall be disabled or removed during the tests in this standard (unless they physically cannot be removed or disabled when the equipment is deployed). In addition, for systems with multiple feeds such as "A" and "B", power is only supplied to one feed during the tests in this standard.

### **7.1. Steady-State Input DC Voltage Requirements**

The telecommunications load equipment shall meet its operational requirements at any input voltage of the correct polarity between and including the minimum and maximum values specified in Tables 1 in ANSI T1.315.

### ***7.2. Undervoltage Requirements***

Equipment shall operate properly when exposed to steady state undervoltage conditions and shall comply with the conformance criteria as described in ANSI T1.315. The equipment supplier shall provide a report containing the test methods and results for the above requirement.

### ***7.3. Minimum Operating Voltage***

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.

### ***7.4. Minimum Operating Voltage Cutoff and Recovery for Nominal -48VDC Equipment***

This is an objective for AT&T. It is a strong preference that equipment meet this objective. Equipment that does not meet this objective may require mitigation measures when deployed in some AT&T networks.

Nominal -48VDC equipment shall be equipped with a mechanism (software or hardware) that de-powers the equipment, or substantially reduces power utilized by the equipment (less than 20% compared to nominal power at -48VDC), if the voltage at the input terminals of the equipment drops below -38.5VDC ( $\pm 1.0$  volt) for more than 10 seconds. The equipment shall remain in this de-powered or reduced power state until the voltage returns to at least -45VDC ( $\pm 3.0$  volts). If the voltage drops to between 0 and -20VDC for less than 20mS it is permissible to recover at any voltage greater than -38.5VDC ( $\pm 1.0$  volt). The equipment shall not be permanently damaged or permanently have its performance degraded as a result of de-powering and recovery. The equipment shall recover to normal operation within 30 minutes without manual intervention by service personnel. Equipment software/firmware provisioning shall not be changed or lost as a result of applying voltages below the minimum specified in Table 1. The equipment shall also not cause a recommended fuse or circuit breaker to operate.

The Equipment shall be tested and the results recorded in a test report .

### ***7.5. 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).

### ***7.6. Overvoltage Requirements***

Telecommunications load equipment shall not be permanently damaged or permanently have its performance degraded when an input voltage of correct polarity, with a value between 0 V and the maximum voltage level for each nominal voltage plant specified in Tables 1 of ANSI T1.315 is applied for any period of time.

Equipment shall operate properly when exposed to steady state overvoltage conditions, shall comply with the conformance and test results shall be recorded in a test report as described in ANSI T1.315.

### ***7.7. Overvoltage Transient Requirement***

Equipment shall operate properly when exposed to an overvoltage transient condition , shall comply with the conformance criteria and test results shall be recorded in a test report as described in ANSI T1.315.

### ***7.8. Protective Device Operation Transient***

Equipment shall operate properly when exposed to transient conditions, shall comply with the conformance criteria and test results shall be recorded in a test report as described in ANSI T1.315.

Testing methods shall be utilized to ensure prevention of malfunction or damage.

### ***7.9. Electrical Noise Requirements***

#### ***7.9.1 Noise immunity***

Equipment shall operate properly when exposed to electrical noise, shall comply with the conformance criteria and test results shall be recorded in a test report as described in ANSI T1.315.

#### ***7.9.2 Noise returned by the telecommunications load equipment***

Equipment shall not return excessive noise onto the DC power system, the equipment shall comply with the conformance criteria and test results shall be recorded in a test report as described in ANSI T1.315.

### 7.10. Dual Power Source for AT&T Corp, Inc

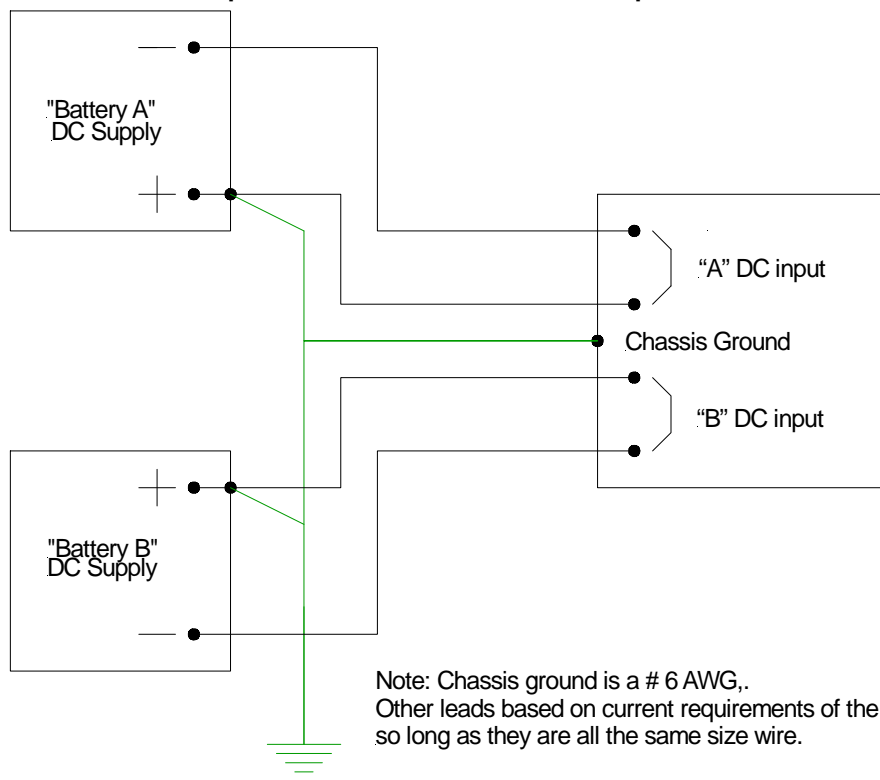
If the Network Element will be installed in an environment powered by redundant independent battery power plants providing  $-48$  VDC (nominal) it will be necessary to perform the test procedure in Section 7.11. The Network Element shall be:

- Powered by a steady state  $-48$  volt (nominal) DC power source
- Able to operate between  $-40$  VDC to  $56.7$  VDC measured at the Network Element unit input power lugs for each individual power source feed.
- Able to accept dual, independent  $-48$  VDC nominal power sources
- Able to accept distribution leads which are connected via AT&T approved power connectors.

In the event that one of the power sources is unavailable, the equipment shall continue to operate from the remaining power source without manual intervention and without interruption of service or functionality (including all LED's, alarms, and indications).

### 7.11. Procedure to test for Dual Power Plant Operation

Figure 7-8  
Test Set Up for Dual Power Plant Operation Test



A. Static test

With the EUT not connected to a power source use a Volt-Ohm meter to measure the resistance between the two battery returns. Record the reading. Reverse the leads and record the second reading.

1. If the resistance is less than 100K ohms, the unit can not be used on Dual Power Plants. It must be certified for Single Power Plant operation.
2. If the resistance is greater than 100K ohms proceed with the operational section of the test.

B. Operational test (-48 equipment)

Power the EUT using two independent DC sources variable from 40 volts to 60 DC volts. See figure 1 for test set up.

1. While maintaining -50 volts on the "A" input to the EUT, lower the voltage on the "B" to -40 volts. Leave the EUT in this condition for 30 minutes.  
*Note: If the EUT will not operate to -40 volts DC, test at .5 volt above the low voltage cutoff point of the EUT.*
2. Measure the DC current on all five wires at the end of the 30 minutes period and record.
3. Shut down the DC power supplies and inspect the EUT for any signs of physical damage.
4. Reapply power (-50 volts) to both inputs and verify proper operation of the EUT.
5. Reduce voltage on the "A" side to -40 VDC and leave the "B" side at -50 volts DC. Leave in this condition for 30 minutes.
6. Measure DC current on all five wires at the end of the 30 minutes and record.
7. Return the "A" side and verify proper operation of the EUT.
8. Shut down the DC power supplies and inspect the EUT for any signs of physical damage.
9. Review the DC current readings for the battery and battery return leads. If all are within 5% of the average of the reading and there is no physical damage to the EUT, the EUT can be certified as working on Dual Power Plants.
10. Review measurements on ground lead and report any reading over 5% of the total current provided.

### C. Current Drains

Current Drain information shall be provided to outline current draws in both normal and worst case voltage scenarios. (The latter information shall also address impacts of failed feeds and temperature where variable speed fans or any other operating conditions make such considerations appropriate). When multiple configurations are possible because of card variety, test data on several "generic" configurations shall be provided with a table of power numbers to help the user interpolate the approximate values of other configurations.

### D. Network Element, Shelf or Circuit Pack Power

Each element/shelf/circuit pack, whichever is the smallest independent load device of the Network Element, shall obtain power from two completely independent power units. Furthermore, the return path from the power units shall remain completely independent.

If one of the power units fails, an alarm shall be generated and the load shall be carried by the other unit without manual intervention and without interruption of service or functionality. The other power unit shall support the operation of the element/shelf/circuit pack until the problem with the faulty unit is corrected.

### E. OR-ing Diodes

The use of "OR-ing" diodes to combine power feeders may be used to power a network element from two power sources provided all the following requirements are met:

- a) Appropriately sized over-current protection devices shall be present in each power path to the unit, within the network element.
- b) Diodes shall also be included in each power path return of the unit.
- c) The maximum steady state current to be handled by the diode shall be limited to 50% of the diode's maximum steady state current rating.
- d) Current transients shall not exceed the maximum rated value for the diode.
- e) The maximum reverse voltage across the diode shall be limited to 70% of the diode's peak inverse voltage rating.

### H. Low Input Voltage Recovery

Network Elements must be able to automatically recover from the low input voltage shutdown through a controlled restart process. The restart shall occur when the voltage measured at the input terminals of the equipment frame is  $-45\text{VDC}$  ( $\pm 3.0$  volts). for equipment deployed in central office environments and regenerator or other remote locations containing largely similar equipment, The NE shall return to normal operation (based on its current configuration data) without manual intervention, and without causing any overcurrent protection devices to operate.

## 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

A. 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.

B. Class 3 Equipment shall meet the Salt Fog Exposure requirements of GR-3108-CORE, Section 6.1.

### ***8.3. Fan Filter Requirements***

A. **Central Office Equipment**, except for power source equipment (e.g. rectifiers, etc.) 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 require or be deployed with filters and conformance to fan filter standards is not required.

D. GR-63-CORE, Issue 3, Objective O4-94 for fan filter alarms shall be a requirement.

## 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

1. The manufacturer shall be in compliance to transportation vibration requirements specified in Telcordia document 3108-CORE, Section 2.10.
2. OSP equipment that weighs 220 lbs (100 kgs) or less shall conform to the Drop Test requirements in Section 5.4 of GR-950-CORE. As an objective, this equipment should conform to the Drop Test requirements in Section 4.2 of GR-2834-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.

### **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:

- An 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 GR-63-CORE Section 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**

A. Equipment installed in CO, Huts and CEVs shall meet the following requirements.

#### **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. The equipment covered would typically be rack mounted in two or four post framework intended for environmentally controlled environments. The equipment framework if provided by the equipment manufacturer shall be approved by AT&T and in conformance to AT&T performance and dimensional requirements.

**Form ESP-1 and/or ESP-2, physical data and engineering data shall be completed to include dimensional and weight data on equipment covered in this section. ESR-3-CO form, box 11.4, 11.5, 11.6 and 11.7 shall be checked Y, N or N/A as applicable on conformance to following paragraphs.**

## **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. An equipment unit may also be known as a shelf, cardcage, chassis or apparatus as defined in ATIS documents. The unit will basically be a mechanical structure designed specifically to support associated electrical and electronic components. The unit shall be designed for vertical rack mounted in two or four post frameworks of industry standard widths.

## **11.4. Framework and Equipment Requirements**

Equipment and framework intended for legacy environments of two post framework lineups:

- A. Framework shall be designed for freestanding configuration not requiring overhead support with maximum height of 7'-0". Framework base shall have provisions for floor anchoring of anchor hardware up to 18mm diameter and capabilities for repositioning anchors at minimum of 1" to avoid rebar. AT&T requirements require all framework to be designed and tested for Zone 4 service.
- B. Equipment unit shall be designed for 23" or 19" nominal width mounting and fit within uprights of a standard 23" width framework. Where 19" equipment is provided, mounting adapters shall be provided for installation in 23" width framework. (limited applications of 19" nominal width framework are used and, if designated, equipment shall be designed to fit within 17-1/4" clearance between frame uprights.)
- C. Framework should not exceed 2'-6" in overall width.
- D. In legacy transport environments equipment and framework should not exceed 15" in depth when adding to existing lineups.
- E. In newer technology lineups equipment and framework shall not exceed 24" in depth
- 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.
- G. Where product requires additional cabling space adjacent to equipment framework, designate on form ESP-1 and/or ESP-2 under Engineering Data, Additional Space Requirements.

Equipment intended for four post framework installation lineups:

- A. Framework shall be designed for freestanding configuration not requiring overhead support with maximum height of 7'-0". Framework base shall have provisions for floor anchoring of anchor hardware up to 18mm diameter and capabilities for repositioning anchors at minimum of 1" to avoid rebar. AT&T requirements require all framework to be designed and tested for Zone 4 service.
- B. Equipment unit shall be designed for 23" or 19" nominal width mounting and fit within uprights of a standard 23" width framework. Where 19" equipment is provided, mounting adapters shall be provided for installation in 23" width mounting rail configuration.
- C. Framework width shall be designed for maximum 30" width.
- D. Framework depth shall be designed for 24" to 36" depth.
- E. Doors, slide drawers should not require more than 30 inches space into aisles to use.
- F. Four post framework shall allow for room ventilation air to freely enter and exit enclosure. Doors, side panels and top panels shall be designed for air flow if provided.

### **11.5. Equipment Floor Loading**

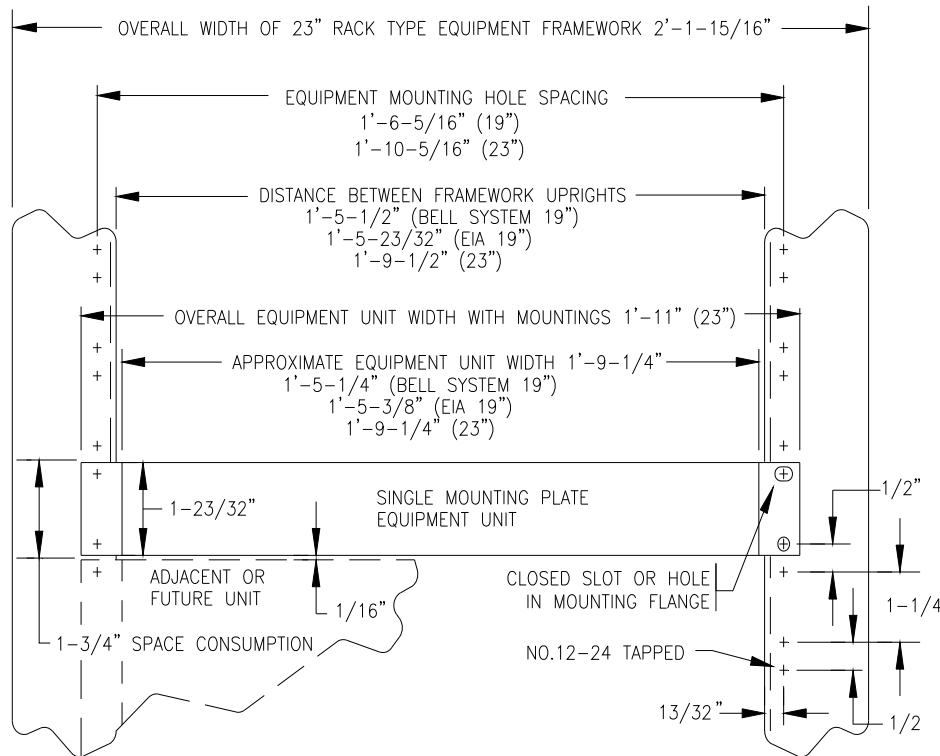
An individual framework loaded with equipment shall be designed and constructed to floor load requirements of less than 560 kg/m<sup>2</sup> (114.7 lb./ft<sup>2</sup>). The floor loading for an equipment framework is calculated by dividing the frame weight by the area of a rectangle bounded by the extended frame sides and half of the front (3 ft -0 in. or 18 in) and half of the rear (2 ft.-6 in. or 15 in.) aisles. The standard framework footprint to be used in AT&T calculations would be 26 in. wide and 24" deep. For four post frameworks use footprint dimension of framework and same front and rear aisle dimensions. Total weight of equipment should include all cables that may be required in normal field installation.

### **11.6. Equipment Units**

Equipment units:

- A. Shall be designed so they are installed from the front and cabled from the rear of equipment framework assemblies,
- B. Shall incorporate the use of holes or closed slots in mounting hardware for attachment to equipment framework mounting surfaces, and be designed for 23" nominal width framework,
- 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. Limited applications of products that will not permit rear access will require that equipment be designed strictly for front access where cabling, maintenance and normal service be performed from front only. These products shall be designed for front access and indicated on form **ESP-1** and/or **ESP-2**, **Engineering Data**,

**Equipment Locating Restrictions as YES, "Front Access Only"** Only those products intended for limited applications such as CEV installations, ETSI compliant products or other AT&T authorized use shall be designed for front access.



**Figure 11 -1 - Commonly Referenced Equipment Spatial Considerations**

B. Equipment installed in CO, Huts and CEVs shall meet the following requirements.

### 11.7. *OSP Electronics*

Equipment installed in OSP shall meet the spatial requirements of Telcordia GR-3108-CORE, Section 3.

## 12. PHYSICAL DESIGN AND MANUFACTURING REQUIREMENTS

### 12.1. Physical Design and Manufacturing

A. CO and OSP 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.

B. OSP electronic assemblies shall meet the physical design requirements of the most recent issue of Telcordia GR-3108-CORE, Section 2.

### 12.2. Environmental Hazards

Requirements in this section are intended to identify hazardous materials as defined by the regulatory agencies (USEPA, US OSHA, state and local regulatory bodies and European Union) and assess the equipment under review’s compliance to the European Union Restriction of Hazardous Substances (RoHS)<sup>1</sup>. This standard applies to electrical and electronics products, including, but not limited to, IT and telecommunications equipment, consumer equipment, lighting equipment, electrical and electronic tools, sold to AT&T.

- A. Manufacturer shall complete Form HSD, paragraph 14.5, and forward to AT&T.
- B. Equipment submitted for approval for use within any AT&T networks shall not be RoHS 6/6 compliant. Specifically, tin lead solder shall be used for circuit board assembly per Telcordia Notice to the Industry, November 2006, Reliability Concerns with the Use of Lead (Pb) Free Solder in Telecommunications Products.
- C. RoHS 5/6 compliance is required only for equipment intended for use by AT&T Global Services.

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<sup>1</sup> The European Parliament and Council of the European Union, “ Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment (EEE),” Official Journal of The European Union, February 12, 2003, pp. L 37/24-38.

### 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:

Duane Arnold  
3901 SW LOOP 820  
Fort Worth, TX, 76133-2026  
Phone: (817)370-4004  
e-mail: ba5811@sbc.com

#### OSP Enclosures

##### 13.2. *General*

This section contains physical requirements for OSP enclosures. Typically each type of enclosure shall 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 Duane Arnold at (817) 370-4004.

**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 shall 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, Sections 4.2 and 4.7.
- B. GR-1089-CORE, Issue 4, Section 7.2.
- C. GR-2890-CORE 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.

### **14.5. HSD Form**

Form HSD, *Hazardous Substances Declaration*, shall be completed by product supplier's representative having explicit knowledge of the subject addressed. The HSD Form may be used for multi-unit products provided each individual unit comprising the product is specifically referenced in the space provided.

### **14.6. LOA-LE Form**

Form LOA-001, *Letter of Attestation for Lab Entry*, shall be completed, signed and notarized by supplier when equipment is intended for placement in AT&T test laboratories and the equipment does NOT meet Objective 1.10.B of this document.

## **15. PRODUCT INFORMATION FORMS:**

**NOTE:** See following pages:

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 42.6V  
List 2X drain \_\_\_\_\_ amps at 42.6V

Feeder 2(Load B): List 1 drain: \_\_\_\_\_ amps at \_\_\_\_\_ V  
List 2 drain: \_\_\_\_\_ amps at 42.6V  
List 2X drain \_\_\_\_\_ amps at 42.6V

(List 2X is defined in ATT-TP-76450)

Minimum Operating Voltage \_\_\_\_\_ and current \_\_\_\_\_ from test in Section 7.3

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.



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 42.6V  
List 2X drain \_\_\_\_\_ amps at 42.6V

Feeder 2(Load B): List 1 drain: \_\_\_\_\_ amps at \_\_\_\_\_ V  
List 2 drain: \_\_\_\_\_ amps at 42.6V  
List 2X drain \_\_\_\_\_ amps at 42.6V

(List 2X is defined in ATT-TP-76450)

Minimum Operating Voltage \_\_\_\_\_ and current \_\_\_\_\_ from test in Section 7.3

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 m<sup>2</sup>) 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 m<sup>2</sup>) 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 m<sup>2</sup>) 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

15.2. Form ESR-001

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

Manufacturer: \_\_\_\_\_ Product Name: \_\_\_\_\_ Date: \_\_\_\_\_

<b>CENTRAL OFFICE DEPLOYMENT</b>											
<b>2. GR-1089 Electromagnetic Compatibility &amp; Electrical Safety Requirements: Note The requirement numbers below are the GR1089 Absolute Requirement Numbers. See GR1089, Paragraph 1.4.1</b>											
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				
34	Current Limiting Prot.					60	Class AB inacces.				
22	Listing AC Power					61	Rubber gloves ...				
23	Listing Inverters					62	Eqpt pwr'd by gen.				
24	Listng Cust Prem Equip					63	Class B de-energzd				
25	EUT damage					64	Interrupted/tripped v.				
29	EUT Safety Hazard					65	Voltage interrupted				
33	EUT Safety Hazard					66	Int./Tripped include				
36	EUT Safety Hazard					67	Peak Voltage				
37	Series Type Network					68	Sources Com. Wire				
137	EUT Safety Hazard					69	Current - 100cm				
39	EUT on Cust. Prem					70	Current - 1cm				
40	EUT Safety Hazard					71	Current measured				
						115	Continuous Source Volt				
						125	EUT Safety Hazard				
<b>Other ATT-TP-76200 Requirements:</b>											
<b>5. Grounding</b>						<b>9. Shock and Vibration</b>					
5.0	GR-1089, Section 9					9.4	Positive Latching				
						9.6	Standard Frames				
<b>6. Thermal</b>						<b>10. Fire Resistance</b>					
<b>C. Heat Dissipation</b>						10.3	Material Compon.				
6.3A1	Heat Dissip. Data <sup>1</sup>					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.										

<b>NON-CENTRAL OFFICE BUILDINGS:</b>											
	Description	Y	N	n/a	Att.#		Description	Y	N	n/a	Att.#
	NRTL listing						FCC Part 15 <sup>2</sup>				

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.

15.3. ESR-001-OSP

**Level One**  
**ATT-TP-76200 Minimum Safety Requirements:**  
**Outside Plant Cabinets and Enclosures**

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					54	Class A1 Voltage				
8	Radiated Emissions					55	Class A2 Voltage				
10	Radiated Emissions					56	Class A3 Voltage				
11	Radiated Emissions					57	Class A3 segregtd				
12	Conducted Emissions					58	Class A3 Labeled				
13	Common Mode Emiss.					59	Class AB restricted				
14	Unintentional Cond Em					60	Class AB inaces.				
20	Manuf. CO switching.					61	Rubber gloves ...				
34	Current Limiting Prot.					62	Eqpt pwr'd by gen.				
22	Listing AC Power					63	Class B de-energzd				
23	Listing Inverters					64	Interrupted/tripped v.				
24	Listng Cust Prem Equip					65	Voltage interrupted				
25	EUT damage					66	Int./Tripped include				
29	EUT Safety Hazard					67	Peak Voltage				
33	EUT Safety Hazard					68	Sources Com. Wire				
36	EUT Safety Hazard					69	Current - 100cm				
37	Series Type Network					70	Current - 1cm				
137	EUT Safety Hazard					71	Current measured				
39	EUT on Cust. Prem					115	Continuous Source Volt				
40	EUT Safety Hazard					125	EUT Safety Hazard				
41	EUT not meet require.										
Other Applicable ATT-TP-76200 Level 1 Requirements:											
5. Grounding						10. Fire Resistance					
5.0	GR-1089, Section 9					10.5C	GR-3108, Section 6.5.				
6. Thermal						Completed FRM-001 Form					
C. Heat Dissipation											
6.3B	OSP Heat Dissip.										

15.4. Form ESR-002

**Level Two**  
**ATT-TP-76200 Requirements for Deployment of Non-network**  
**Equipment in Mission Critical Data Room\***

Manufacturer: \_\_\_\_\_ Product Name: \_\_\_\_\_ Date: \_\_\_\_\_

<b>MINIMUM SAFETY REQUIREMENTS:</b>											
DESCRIPTION							Y	N	n/a	Att.#	
Equipment is listed by an NRTL											
Equipment is compliant to FCC Part 15 EMC requirements											
<b>RELIABILITY REQUIREMENTS:</b>											
Item	Reference	Y	N	n/a	Att.#	Item	Reference	Y	N	n/a	Att.#
<b>2 GR-1089-CORE</b>						<b>GR-63-CORE</b>					
Equipment Type						<b>6 Thermal</b>					
EMI Emissions Criteria [8,10,11,12,13,14]						<b>6.1D Temperature and Humidity</b>					
EMI Immunity Criteria [16,18]						Operating Conditions only for GR-63, Criteria [72,73]					
Lightning Immunity, 1 <sup>st</sup> & 2 <sup>nd</sup> Level Criteria: [27,28,29, 30-33]						<b>8 Airborne Contaminants</b>					
<b>AC Power Fault Immunity</b>						8.1 Indoor, GR-63, 10 Day					
AC Power Fault Immunity, 1 <sup>st</sup> & 2 <sup>nd</sup> Level Criteria [[35-37& 39-41]											
Short Circuit Test [25]											
Current Limiting Protector Test [34]											
Voltage Limiting Protector Test [20]											
<b>Electrical Safety</b>						<b>9 Shock and Vibration</b>					
Listing Requirements [22-24]						9.3 Earthquake, Zone 2					
Electrical Safety Criteria [54-71]						9.8 Office Vibration					
Steady State Power Criteria: [42,44,46-49]						<b>12 Physical Design and Manufacturing</b>					
<b>4 Electrostatic Discharge</b>						12.1 GR-78					
Normal Operations and I&R Criteria [1-3, 5-7]						12.2B RoHS 5/6 Compliant					
						12.2B Assembled/Lead Solder					

See Section 1.6 for definition of Mission Critical Data Room

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.#
<b>2 Electromagnetic Compatibility/Electrical Safety</b>						<b>7 DC Power</b>					
2.2	Equipment Type					7.2	Under voltage				
2.3	Rad. Emission					7.3	Min. Operating V*				
2.4	Cond. Emission					7.4	Cutoff and Recovery				
2.5	Immunity					7.5	Current Drain*				
2.6	Lightning/AC Pwr.					7.6	Over voltage transient				
2.7	Steady State Pwr.					7.7	Protective Device trans				
2.8	Electrical Safety					7.8	Noise Immunity				
						7.9	Under voltage				
2.9	DC Potential					<b>8 Airborne Contaminants</b>					
						8.1	Indoor, GR-63				
						8.3	Fan Filters				
						<b>9 Shock and Vibration</b>					
						9.1	Transport				
<b>3 Acoustic Noise</b>						9.2	Vibration				
3.1	Meet GR-63					9.3	Earthquake				
						9.4	Positive Latching				
<b>4 Electrostatic Discharge &amp; Fast Transient</b>						9.5	Hard Drive Backup				
4.1	GR-1089,					9.6	Standard Frames				
4.2	GR-1089,					9.7	Self Support Frame				
4.3	GR-1089,					9.8A	Office Vibration, Indoor				
						9.9	Floor Loading				
<b>5 Grounding</b>						<b>10 Fire Resistance</b>					
5.1	GR-1089, Section 9					10.3	Materials & Comp.				
						10.4	Protective Barriers				
<b>6 Thermal</b>						10.5	Fire Spread				
<b>6.1 Temperature and Humidity</b>						Fire Test Video Included:					
6.1A	Indoor, GR-63					Completed FRM-001 Form					
						<b>11 Spatial</b>					
<b>6.2 Altitude</b>						11.4	Equipment and Framework				
6.2A	Indoor GR-63					11.5	Equipment Loading				
						11.6	Equipment Units				
						11.7	OSP				
<b>6.3. Heat Dissipation</b>						<b>12 Physical Design and Manufacturing</b>					
6.3A1	Heat Dissip. Data*					12.1	GR-78				
6.3A2	Forced Air Cooled					12.2B	RoHS 5/6 Compliant				
6.3A3	Flow Front to Back					12.B	Assembled/Lead Solder				
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 Rooms<sup>1</sup>**

Manufacturer: \_\_\_\_\_ Product Name: \_\_\_\_\_ Date: \_\_\_\_\_

Item	Reference	Y	N	n/a	Att.#	Item	Reference	Y	N	n/a	Att.#
						<b>7 DC Power (if applicable)</b>					
						7.2	Under voltage				
						7.3	Min. Operating V*				
						7.4	Cutoff and Recovery				
<b>2 Electromagnetic Compatibility/Electrical Safety</b>						7.5	Current Drain*				
2.2	Equipment Type					7.7	Over voltage transient				
2.3	Rad. Emission					7.8	Protective Device trans				
2.4	Cond. Emission					7.9	Noise Immunity				
2.5	Immunity										
2.6	Lightning/AC Pwr.					<b>8 Airborne Contaminants</b>					
2.7	Steady State Pwr.					8.1	Indoor, GR-63				
2.8	Electrical Safety					8.3	Fan Filters				
2.8	NRTL Listing (required)					<b>9 Shock and Vibration</b>					
2.9	DC Potential					9.1	Transport				
<b>3 Acoustic Noise</b>						9.2	Vibration				
3.1	Meet GR-63					9.3	Earthquake				
<b>4 Electrostatic Discharge &amp; Fast Transient</b>						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				
<b>5 Grounding</b>						9.8A	Office Vibration, Indoor				
5.1	GR-1089, Section 9					9.8B	Office Vibration, OSP				
<b>6 Thermal</b>						9.9	Floor Loading				
<b>6.1 Temperature and Humidity</b>						<b>10 Fire Resistance</b>					
6.1A	Indoor, GR-63					10.3	Materials & Comp.				
<b>6.2 Altitude</b>						<b>12 Physical Design and Manufacturing</b>					
6.2A	Indoor GR-63					12.1	GR-78				
<b>6.3. Heat Dissipation</b>						12.2B	RoHS 5/6 Compliant				
6.3A1	Heat Dissip. Data <sup>2</sup>					12.2B	Assembled/Lead Solder				
6.3A4	Face Temperature										

1. NOTE: Equipment intended for deployment in both CO and non-CO locations must be compliant to both Level 3 CO &

NCO requirements

2. 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: \_\_\_\_\_

<b>CLASS 2 &amp; 3<sup>1</sup> OSP ELECTRICAL COMPONENT REQUIREMENTS<sup>2</sup></b>											
Item	Reference	Y	N	n/a	Att.#	Item	Reference	Y	N	n/a	Att.#
<b>2 Electromagnetic Compatibility/Electrical Safety</b>						<b>6.3. Heat Dissipation</b>					
2.2	Equipment Type					6.3B	GR-3108, Section 4.1 <sup>3</sup>				
2.3	Rad. Emission										
2.4	Cond. Emission					<b>7 DC Power</b>					
2.5	Immunity					7.2	Under voltage				
2.6	Lightning/AC Pwr.					7.3	Min. Operating V*				
2.7	Steady State Pwr.					7.4	Cutoff and Recovery				
2.8	Electrical Safety					7.5	Current Drain*				
2.9	DC Potential					7.7	Over voltage transient				
						7.8	Protective Device trans				
						7.9	Noise Immunity				
<b>3 Acoustic Noise</b>						<b>8 Airborne Contaminants</b>					
3B	GR-487, Section 3.29					8.2 A	GR-3108, Section 6.4				
						8.2 B	GR-3108, Section 6.1				
<b>4 Electrostatic Discharge &amp; Fast Transient</b>						8.3	No fan filters				
4.1	GR-1089 Section 2					<b>9 Shock and Vibration</b>					
						9.1 B	Transport & Handling				
<b>5 Grounding</b>						9.2	Vibration				
5.1	GR-1089, Section 9					9.3	Earthquake				
						9.4	Positive Latching				
<b>6 Thermal</b>						9.5	Hard Drive Backup				
<b>6.1 Temperature and Humidity (pick applicable rqmt)</b>						9.7	Self Support Frame				
6.1B	GR-3108, Section 4					9.8B	Office Vibration, OSP				
6.1B	Fan Failure					<b>10 Fire Resistance</b>					
6.1C	GR-3108, GR-487					10.5C	GR-3108, Section 6.5.				
<b>6.2 Altitude</b>						12 Physical Design and Manufacturing					
6.2B						12.1	GR-78				
						12.2B	RoHS 5/6 Compliant				
						12.2B	Not RoHS 6/6 Compliant				

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.

<b>OSP ENCLOSURES</b> <b>(select applicable requirement)</b>											
Item	Reference	Y	N	n/a	Att.#	Item	Reference	Y	N	n/a	Att.#
<b>Pedestal &amp; Pole Mounted Enclosures</b>						<b>Inside Customer Premises Equipment Enclosures</b>					
13.3	GR-487, Section 3					13.5	GR-63, Sections 4.2 & 4.7				
<b>Outside Building Mounted Enclosures</b>						13.2 D	GR-1089, Section 7.2				
13.4	GR-950, Section 5					13.2 D	GR-2890, Section 6				
<b>13.2 C</b>	<b>Rain Resistant?</b>										
<b>13.2 C</b>	<b>Flood Resistant?</b>										

15.8. Form ESR-ANC

Ancillary Equipment  
 Level 1<sup>1</sup> 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.#
<b>2. Electromagnetic Compatibility/Electrical Safety</b>						<b>7. DC Power</b>					
2.2	Equipment Type					7.2	Under voltage				
2.3	Rad. Emission					7.5	Current Drain*				
2.4	Cond. Emission					7.7	Over voltage transient				
						7.8	Protective Device trans				
2.5	Immunity					7.9	Noise Immunity				
2.6	Lightning/AC Pwr.					<b>8. Airborne Contaminants</b>					
2.6	Fault Testing					8.1	Indoor, GR-63				
2.7	Steady State Pwr.					8.2	OSP , GR-3108				
2.8	Electrical Safety										
						<b>9. Shock and Vibration</b>					
<b>4. Electrostatic Discharge</b>						9.2	Vibration				
4.1	GR-1089, Sec 2.1.2					9.3	Earthquake				
4.2	GR-1089, Sec 2.1.2.4					9.8	Office Vibration				
4.3	GR-1089, Sec 2.2					<b>10. Fire Resistance</b>					
						10.3	Materials & Comp.				
<b>5. Grounding</b>						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					
<b>6. Thermal</b>						<b>12 Physical Design and Manufacturing</b>					
<b>6.1 Temperature and Humidity</b>						12.1	GR-78				
6.1A	Indoor, GR-63					12.2B	RoHS 5/6 Compliant				
6.1B	OSP , GR-3108					12.2B	Assembled/Lead Solder				
<b>6.3 Heat Dissipation</b>						<div style="border: 1px solid black; padding: 5px;"> <p>NOTE:</p> <p>Some tests may not be required if circuit packs can be demonstrated to be similar to original circuit packs in construction. See Appendix B.</p> </div>					
6.3A1	Heat Dissip. Data <sup>2</sup>										
6.3A2	Forced Air Cooled										
6.3A3	Flow Front to Back										
6.3A4	Face Temperature										

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

15.9. Form HSD, Page 1

**HAZARDOUS SUBSTANCES DECLARATION**

Supplier:

Product Name:

Product ID:

Nomenclature (Acronym):

The supplier declares that it complies with all laws and regulations that apply to this product. Specifically, the supplier shall declare if this product contains any hazardous substances listed by the regulatory agencies (USEPA, US OSHA, state and local regulatory bodies) or in the EU Directive 2002/95/EC<sup>1</sup> (RoHS) in excess of maximum level of content listed by Commission Decision<sup>2</sup> regarding maximum concentration values<sup>2</sup>.

The supplier shall complete Page 2 and Page 3 of this form to declare:

1. If the product contains hazardous substances as defined by the regulatory agencies (USEPA, US OSHA, state and local regulatory bodies and European Union) and, if so, the supplier shall identify the material and the steps that should be taken to mitigate its toxicity.
2. If the product contains any of the following hazardous substances identified in RoHS and, if so, why the substances cannot be removed.

- Lead
- Mercury
- Cadmium
- Hexavalent Chromium
- Polybrominated biphenyls (PBBs), or
- Polybrominated diphenyl ethers (PBDE).

The product is RoHS 5/6<sup>3</sup> compliant: YES  NO

The product is RoHS 6/6<sup>4</sup> compliant: YES  NO

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

By:

Title:

Date:

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

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1. The European Parliament and Council of the European Union, " Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment (EEE)," Official Journal of The European Union, February 12, 2003, pp. L 37/24-38.  
2. Commission Decision," Amending for the Purposes of Adapting to the Technical Progress the Annex to Directive 2002/95/EC of the European Parliament and of the Council for the Purpose of Establishing the Maximum Concentration Values for Certain Hazardous Substances in Electrical and Electronic Equipment (EEE)," Official Journal of the European Union, August 19, 2005, pp. L 214/65.  
3. Compliant to all RoHS restrictions except lead. RoHS 5/6 is acceptable for any AT&T equipment and is required for equipment deployed outside of the United States.  
4. Compliant to all RoHS restrictions. AT&T does not accept equipment assembled with lead-free solder (i.e., equipment may not be RoHS 6/6 compliant).

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15.10 Form HSD, Page 3

### Declaration of EPA Hazardous Materials Mitigation Procedures

Manufacturer                      Product Name

For each hazardous material identified for the product on Form HSD Page 2 complete the following (add more as necessary):

#### **Hazardous Material #1:**

Identify steps to:

- Avoid Exposure:
- Avoid injury or further physical damage, if accidentally exposed:
- Properly dispose of substance:

Where are these steps identified in manufacturer's documentation?

#### **Hazardous Material #2:**

Identify steps to:

- Avoid Exposure:
- Avoid injury or further physical damage, if accidentally exposed:
- Properly dispose of substance:

Where are these steps identified in manufacturer's documentation?

#### **Hazardous Material #3:**

Identify steps to:

- Avoid Exposure:
- Avoid injury or further physical damage, if accidentally exposed:
- Properly dispose of substance:

Where are these steps identified in manufacturer's documentation?

**15.10. Form LOA-LE**

LETTER OF ATTESTATION – Lab Entry

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

Form LOA-001, *Letter of Attestation for Lab Entry*, shall be completed, signed and notarized by supplier when equipment is intended for placement in AT&T test laboratories and the equipment does NOT meet Objective 1.10.B of this document.

Per requirement 1.10.B ([Company name](#)) hereby asserts, to the best of its knowledge, and pursuant conclusions drawn from sound engineering judgment, that the equipment described below meets or exceeds electrical safety and fire standards as detailed in UL 60950.

Equipment vendor name:

Equipment model:

[\(Company name\)](#) 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: \_\_\_\_\_

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

## 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.
- NCO-Level: Documentation supporting NRTL-Listing and FCC Part 15

- Level Two: Completed forms ESR-002, ESP-001 or ESP-002, FRM-001, HSD, 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 CO or –ESR-003 NCO, ESP-001 or ESP-002, FRM-001, HSD 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.

**Note: The ATT-TP76450 Checklist is required on all CO-Level 3 evaluations.**

- Ancillary: Completed forms ESR-ANC, FRM-001, HSD, 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
- 8) Complete HSD 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 Room<sup>1</sup>
- NCO<sup>2</sup>/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.

Can the equipment provide powering to external network devices or interfaces by using -48 Volt over twisted pairs? Yes  No   
If yes, the Fast Track Process may not be used, full test reports must be submitted for evaluation.

Can the equipment be powered by external -48 Volt? Yes  No   
If yes, the Fast Track Process may not be used, full test reports must be submitted for evaluation.

**Page 2 of AT&T Services Letter of Attestation**

1. 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
2. Non-central office

(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:** \_\_\_\_\_

**NOTE:** Information describing the product must accompany the Letter of Attestation (e.g., brochures, pamphlets etc.)

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<sup>2</sup> (46.5 in.<sup>2</sup>).
- 8) Evolution of plug-in circuit packs used in a product makes it questionable whether the product accurately resembles its original test configuration.

Acceptance of a new Product by "similarity" as compared with a previously Approved Product.

Generally ,if a pizza box type product having the same size, weight, physical and electrical properties as well as possessing the same material components to that of a product(s) that has been previously tested and passed for fire propagation characteristics, need not be tested again.

An statement is required from an approved testing lab stating:

- 1) Product "A" contains same material as Product "B"
- 2) Product "A" has the same physical and electrical characteristics as product "B"
- 3) Product "A" has same fire propagation characteristics as Product "B"

Submit:

- 4) A test report with date and test results for Product "B"
- 5) Any exception taken during the test of Product "B"
- 6) Any dissimilarities between Product "A" and Product "B"

## 18. APPENDIX C

### Exemptions to the European Union Restriction of Certain Hazardous Substances

This appendix details the exemptions that are allowed to RoHS per the European Union.

Application of lead, mercury, cadmium and hexavalent chromium, which are exempted from the requirements of Article 4(1).

1. Mercury in compact fluorescent lamps not exceeding 5 mg per lamp.
2. Mercury in straight fluorescent lamps for general purposes not exceeding:
  - halophosphate 10 mg
  - triphosphate with normal lifetime 5 mg
  - triphosphate with long lifetime 8 mg
3. Mercury in straight fluorescent lamps for special purposes.
4. Mercury in other lamps not specifically mentioned in this Annex.
5. Lead in glass of cathode ray tubes, electronic components, and fluorescent tubes.
6. Lead as an alloying element in steel containing up to 0.35% lead by weight, aluminum containing up to 0.4% lead by weight, and as a copper alloy containing up to 4% lead by weight.
7.
  - lead in high melting temperature type solders (i.e. tin-lead alloys containing more than 85% lead),
  - lead in solders for servers, storage, and storage array systems (exemption granted until 2010),
  - lead in solders for network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunications equipment.
  - lead in electronic ceramic parts (e.g. piezoelectric devices).
8. Chromium plating except for applications banned under Directive 91/338/EEC amending 76/769/EEC relating to restrictions on the marking and use of certain dangerous substances and preparations.
9. Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators.
10. Within the procedure referred to in Article 7(2), the Commission shall evaluate the applications for:
  - Deca BDE;
  - mercury in straight fluorescent lamps for special purposes;
  - lead in solders for servers, storage and array systems, network infrastructure equipment for switching, signaling, transmission, as well as network management for telecommunications (with a view for setting a specific time limit for this exemption);
  - Light bulbs,

as a matter of priority in order to establish as soon as possible whether these items are to be amended accordingly.