



Verizon NEBS™ Compliance: NEBS Requirements for SHE/VHO Equipment

Verizon Technical Purchasing Requirements

VZ.TPR.9702

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| 2 | 2/12/2009 | Add | Requirements for unprotected VHO in CO and risk levels |
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Table of Contents

| | | |
|------------|-------------------------------------|----------|
| 1.0 | PURPOSE | 5 |
| 2.0 | SCOPE | 5 |
| 3.0 | REFERENCES | 5 |
| 4.0 | ACRONYMS | 6 |
| 5.0 | DEFINITIONS | 6 |
| 6.0 | GENERAL REQUIREMENTS | 6 |
| 7.0 | PASS/FAIL REQUIREMENTS | 7 |
| 8.0 | TEST REQUIREMENTS | 7 |
| 9.0 | RISK ASSESSMENT | 8 |



1.0 PURPOSE

The purpose of this Verizon Technical Purchasing Requirement document is to provide the minimum required NEBS testing for SHE/VHO equipment.

As with other products that serve the network, SHE/VHO equipment shall be tested to determine their safety, performance, and reliability characteristics. The supplier shall provide a production-ready sample to a Verizon-approved Independent Testing Laboratory (ITL) for testing and shall furnish the test results to Verizon's NEBS Compliance and Quality Assurance team for review. In addition to NEBS testing, SHE/VHO equipment shall comply with all applicable local, state and federal statutes and regulatory requirements prior to general deployment.

2.0 SCOPE

This Technical Purchasing Requirement document is intended to summarize Verizon's Environmental, Electromagnetic Compliance, and Electrical Safety requirements, as well as any additional requirements for all of its SHE/VHO products. This document applies to SHE/VHO equipment that is permanently installed in the network. The "punchlist" of tests contained herein shall be used by equipment suppliers and the Verizon-approved Independent Test Laboratory as the baseline of tests to create the NEBS test plan. In all instances of test planning and test execution, the most recent and accepted versions of the GR standards shall be used.

3.0 REFERENCES

| | |
|---------------------------------|---|
| GR-63-CORE | NEBS™ Requirements: Physical Protection |
| GR-78-CORE | Generic Physical Design Requirements for Telecommunications Products and Equipment |
| GR-1089-CORE | Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunications Equipment |
| SIT.NEBS.TE.NPI.2004.015 | Telecommunications Carrier Group NEBS Compliance Checklist |
| VZ.TPR.9203 | NEBS Requirements by Location |
| VZ.TPR.9305 | NEBS Compliance Clarification Document |
| VZ.TPR.9701 | Physical Construction Requirements for VHOs Located inside COs |



4.0 ACRONYMS

| | |
|------------|---------------------------------------|
| CO | Central Office |
| EMI | Electromagnetic Interference |
| EUT | Equipment Under Test |
| ITL | Independent Testing Laboratory |
| NQA | NEBS Compliance and Quality Assurance |
| SHE | Super Head End |
| VHO | Video Hub Office |

5.0 DEFINITIONS

Hardened Envelope: An area within a network facility that conforms to the construction guidelines as defined in VZ.TPR.9701 – *Physical Construction Requirements for VHOs Located inside COs*.

Protected SHE/VHO Location: A location where the equipment shall be physically, electrically and environmentally separate from network serving equipment installed in traditional central office equipment space. A hardened envelope within a CO is available.

Unprotected SHE/VHO Location: A location where the equipment is not physically, electrically and environmentally separate from network serving equipment or is placed directly into a central office location. No envelope of protection is available.

6.0 GENERAL REQUIREMENTS

Test configuration: The Equipment Under Test (EUT) shall be fully configured and performing its designated functions during the application of NEBS testing. The EUT and all associated documentation (installation and operating manuals), mounting and grounding schemes shall be provided to the test laboratory by the vendor prior to test commencement. All equipment interfaces shall be monitored for functionality and the test plan shall include the pass/fail criteria for each interface or service type.

Verizon requires that manufacturers submit their EUT and associated documentation to a Verizon approved ITL for testing and verification of conformance to the qualification test requirements in this document. For a list of Verizon approved laboratories and locations, consult the Verizon web page at <http://www.verizonnebs.com/tcppage.html>.

In addition to the specific test requirements listed below, products must comply with GR-78-CORE, *Generic Requirements for the Physical Design and Manufacture of Telecommunications*



Products and Equipment. Vendors may self-declare their product's compliance to GR-78-CORE by submitting a completed copy of Appendix C of the Telecommunication Carrier Group Checklist. Current versions of the TCG Compliance Checklist and the Verizon NEBS Clarification document can be found on the Verizon web page (<http://www.verizonnebs.com>).

7.0 PASS/FAIL REQUIREMENTS

The EUT shall be configurable as documented in the manufacturer's installation procedures and shall operate reliably over its intended life cycle. The product shall operate as intended during susceptibility testing (EMI, Earthquake, etc.,) and the test report shall include failure thresholds, if any, so that proper risk analysis can be made. The product shall meet all defined limits in the NEBS standards and the references listed above.

8.0 TEST REQUIREMENTS

All equipment located in a protected SHE/VHO location shall comply with the following NEBS requirements:

GR-1089-CORE

- 3.2 EMI Emissions Criteria
- 4 Lightning and AC Power Fault (2nd Level)
- 7 Electrical Safety
- 9 Bonding and Grounding

GR-63-CORE

- 4.2 Fire Resistance
- 4.4.1 Earthquake Environment and Criteria
- 4.4.2 Framework and Anchor Criteria

Video serving equipment located in an unprotected SHE/VHO location or placed directly in a CO shall be required to gain full NEBS compliance. Refer to VZ.TPR.9203 – *Requirements by Location* for a list of applicable requirements for CO deployment.



9.0 RISK ASSESSMENT

In some deployment cases, there is a possibility of deploying video serving equipment and associated support equipment that has not been tested to the requirements stated above or fails to meet all applicable requirements. In these cases, Verizon NQA will need to perform a risk assessment of the equipment in question. To facilitate this assessment, the vendor shall provide the following additional data for review upon request.

- All NEBS test documentation completed to date
- UL Safety and FCC test documentation
- Description of the performance/service rendered by the equipment (passive or active)
- Anticipated location of equipment (protected or unprotected SHE/VHO location)
- Bill of Material including flammability ratings
- Number of elements to be deployed
- Number of locations for deployment
- Documentation supporting other industry standards testing (i.e. ETSI, IEC, ITU, etc.)
- In-house testing documentation