

# **Verizon NEBS™ Compliance: Test and Measurement Equipment NEBS Requirements**

Verizon Technical Purchasing Requirements

VZ.TPR.9303

**Issue 2, July 28, 2017**

**CHANGE CONTROL RECORD:**

Version	Date	Action*	Reason for Revision
1	3/20/2007	Reissue	SIT.NEBS.RQS.NPI.2005.027, reissued and updated into new format, original issue date 8/1/2005
2	7/28/17	Change	Updated requirements in Section 9
* New, Add, Delete, Change, Reissue			

Trademark Acknowledgement – NEBS is a trademark of Telcordia Technologies, Inc.

**PREPARED BY:**

Name, Title, Organization	Date
<b>Todd Talbot</b> DMTS – Maintenance Engineering - NEBS 320 St. Paul Place, Floor 14 Baltimore, MD 21202 Phone: 410-736-5945 E-mail: todd.f.talbot@verizon.com	7/28/17

**APPROVED BY:**

Name, Title, Organization	Date
<b>David Hampton</b> Manager – Maintenance Engineering 1201 E Arapaho Road Richardson, TX 75081 Phone: 214-416-3894 E-mail: david.hampton@verizon.com	7/28/17

# Table of Contents

<b>1.0</b>	<b>PURPOSE</b> .....	<b>5</b>
<b>2.0</b>	<b>SCOPE</b> .....	<b>5</b>
<b>3.0</b>	<b>REFERENCES</b> .....	<b>5</b>
<b>4.0</b>	<b>ACRONYMS</b> .....	<b>6</b>
<b>5.0</b>	<b>DEFINITIONS</b> .....	<b>6</b>
<b>6.0</b>	<b>GENERAL REQUIREMENTS</b> .....	<b>6</b>
<b>7.0</b>	<b>PASS/FAIL REQUIREMENTS</b> .....	<b>7</b>
<b>8.0</b>	<b>TEST REQUIREMENTS – PORTABLE USE</b> .....	<b>7</b>
<b>9.0</b>	<b>TEST REQUIREMENTS – PERMANENT INSTALLATION</b> .....	<b>8</b>

## 1.0 PURPOSE

The purpose of this Verizon Technical Purchasing Requirement document is to provide the minimum required NEBS testing for Test and Measurement Equipment.

As with other products that serve the network, Test and Measurement Equipment shall be tested to determine their safety, performance, and reliability characteristics. The supplier shall provide a production 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, Test and Measurements 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 additional requirements for all of its Test and Measurement Equipment products. This document applies to Test and Measurement Equipment that is either temporarily used in the equipment space or permanently installed. 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

<b>GR-63-CORE</b>	NEBS™ Requirements: Physical Protection
<b>GR-78-CORE</b>	Generic Physical Design Requirements for Telecommunications Products and Equipment
<b>GR-1089-CORE</b>	Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunications Equipment
<b>IEC 60068-2-32</b>	Environmental Testing, Part 2: Tests, Test Ed: Free fall
<b>SIT.NEBS.RQS.NPI.2006.040</b>	Verizon NEBS Compliance Clarification Document
<b>SIT.NEBS.TE.NPI.2004.015</b>	Telecommunications Carrier Group NEBS Compliance Checklist

#### 4.0 ACRONYMS

<b>CO</b>	Central Office
<b>EMI</b>	Electromagnetic Interference
<b>EUT</b>	Equipment Under Test
<b>IEC</b>	International Electrotechnical Commission
<b>ITL</b>	Independent Testing Laboratory
<b>M&amp;TE</b>	Measurement and Test Equipment

#### 5.0 DEFINITIONS

**Permanent Installation:** A permanent installation is one that meets either of the following criteria: (i) the equipment occupies mounting space within a frame or cabinet; (ii) the interface cables occupy the cable raceways with telecommunications equipment cables.

**Portable Use:** A temporary installation of Test and Measurement Equipment that does not meet the definition for a permanent installation. A temporary installation includes hand held devices.

**Controlled Environmental Location:** Operating temperature range of 5<sup>0</sup>C to 40<sup>0</sup>C.

**Uncontrolled Environmental Location:**

Permanent Installation - Operating temperature range of -40<sup>0</sup>C to 46<sup>0</sup>C plus solar loading.

Portable Use - Operating temperature range of -18<sup>0</sup>C to 46<sup>0</sup>C plus solar loading.

#### 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 B 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/index.html#chklist>).

## **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 immunity and susceptibility testing (EMI, Operational Temperature and Relative Humidity, 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 – PORTABLE USE**

All portable use Test and Measurement Equipment shall comply with the following NEBS requirements:

### GR-1089-CORE

- 3.2 EMI Emissions Criteria
- 3.3 EMI Immunity Criteria

### GR-63-CORE

- 4.1.2 Operating Temperature and Humidity (for environmentally controlled locations only)

Portable use Test and Measurement Equipment used in an environmentally uncontrolled environment, including hand-held devices, shall also comply with the following requirements:

### GR-63-CORE

- 4.1.2 Operating Temperature and Humidity (Modified temperature extremes of -18<sup>0</sup>C to 46<sup>0</sup>C plus Solar Loading)

### IEC 60068

- 68-2-32 Free Fall Tested at -18<sup>0</sup>C (this test applies to hand-held devices only)

*NOTE: Minimum operating ambient temperature for handheld devices is specified as -18<sup>0</sup>C since it is unlikely operators will be performing service calls and using hand-held Test and Measurement equipment at temperatures below -18<sup>0</sup>C.*

## 9.0 TEST REQUIREMENTS – PERMANENT INSTALLATION

Permanently installed M&TE shall comply with all of the following NEBS requirements:

### GR-1089-CORE

- 3.2 EMI Emissions Criteria
- 3.3 EMI Immunity Criteria
- 4 Lightning and AC Power Fault (Where Applicable)
- 7 Electrical Safety
- 9 Bonding and Grounding

### GR-63-CORE

- 2.0 Spatial Requirements
- 4.1.2 Operating Temperature and Humidity
- 4.1.6 Heat Dissipation
- 4.1.7 Surface Temperature
- 4.2 Fire Resistance<sup>1</sup>
- 4.6 Acoustic Noise

In addition to the requirements listed above, permanent M&TE to be located in an uncontrolled environment shall also comply with the following NEBS requirements:

### GR-63-CORE

- 4.1.2 Operating Temperature and Humidity (Modified temperature extremes of -40<sup>0</sup>C to 46<sup>0</sup>C plus Solar Loading)

---

<sup>1</sup> This test is not required for M&TE equipment intended to be located in an outside plant cabinet.