



NEBS Transportation Pre-Test for Sonic-Telco

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OWNER GROUP: AMT/PMC

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1.0 PURPOSE

This document describes the test methods and results obtained for high humidity and shock for Sonic-Telco.

2.0 SCOPE

This document covers the methods, results, and conclusions for all testing. Testing was conducted at Smurfit-Stone at the Westmont Illinois facility on 12/12/03 - 12/19/03.

3.0 REQUIREMENTS

3.1 Reference Documents

GR-63-CORE - April 2002	NEBS Requirements: Physical Protection Environmental Criteria
ETS 300 019 Part 2-2, Class 2.3 - Public Transportation - May 1994	Equipment Engineering (EE); Environmental conditions and environmental tests for Telecommunications equipment Part 2-2: Specification of environmental tests Transportation

3.2 Tooling and Equipment

3.2.1 Hardware

As indicated by GR-63-CORE or ETS 300 019	If required.
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3.2.2 Software

As indicated by GR-63-CORE or ETS 300 019	If required.
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3.3 Materials

Unless otherwise noted the packaging used is the same as used for the non-Telco ft3300 series Stratus product. All packaging used has passed the criteria used by Stratus for non-Telco product, ISTA 1G & 1H.

3.4 Pass/Fail Criteria

All systems/CRUs are visually inspected and functionally tested after each test. In order to pass the system/CRU must not be physically damaged and must function properly. Damaged or destroyed packaging does not constitute a fail.

3.5 Exceptions

Expansion I/O and 6U Backplane CRUs were not tested due to equipment availability.

4.0 TEST

**4.1 Relative High Humidity Exposure - GR-63-CORE -
Sections 4.1.1.3 and 5.1.1.3**

4.1.1 Products Tested

- Telco version of 3300 4U Sonic system in packaging PA-001091
- CPU CRU in packaging PA-001083
- CPU Power Supply in packaging PA-001085
- 4U Backplane Assy CRU in packaging PA-001086
- Processor in packaging PA-001084

4.1.2 Preparation

The standard anti-static bags were not used. Static interceptor bags were used in their place. The static interceptor bags provide a higher resistance to moisture and humidity than the anti-static bags. The open ends of the bags were folded over at least twice and then taped in place to form a seal.

The bags utilized were 24" X 36".

4.1.3 Test Process

Test followed the GR-63-CORE section as indicated below:

Temperature	Event	Duration/ Rate of Change
23°C to 40°C, any RH (73°F to 104°F)	Temperature transition	30°C/hr (54°F/hr)
40°C (104°F)	Transition to 90% to 95% RH	< 4 hr
40°C (104°F), 90% to 95% RH	Temperature/humidity soak	96 hr
40°C to 23°C, any RH (104°F to 73°F)	Temperature transition	30°C/hr (54°F/hr)

There were some exceptions to this. The chamber used maintains up to 90°F only. Temperature was set to 90°F during the test. To compensate the test was extended by 24 hours.

The following illustrate how each product was packaged with noted deviations from standard packaging.

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Telco version of 3300 4U Sonic system in packaging
PA-001091



CPU and I/O CRUs were bagged and placed into the packaging as shown.



The static interceptor bag could not be placed directly over the Backplane CRU. The VHDM connector locating pins would pierce the bag violating the seal. A piece of ESD bag was used where the VHDM connectors contact the foam on the backplane box, preventing contamination of small foam pieces in the connectors.

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The Backplane CRU with the foam was placed inside the bag and then placed in the box as shown.



The rails, keyboard, and mouse were also placed in static interceptor bags.

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CPU CRU in packaging PA-001083



CPU CRU packed in bag

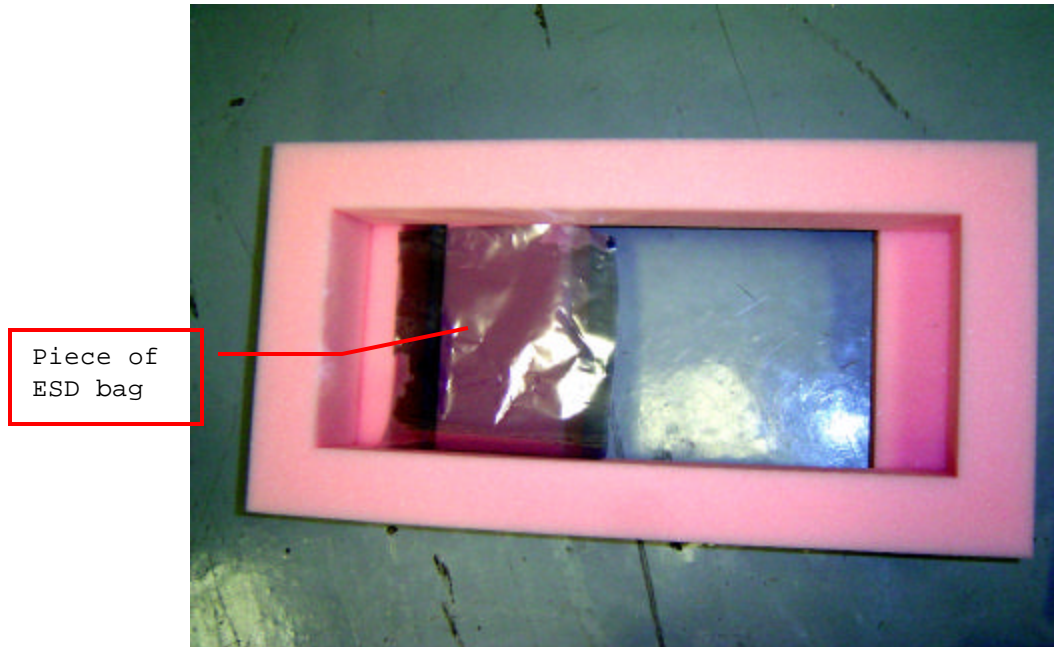
CPU Power Supply in packaging PA-001085



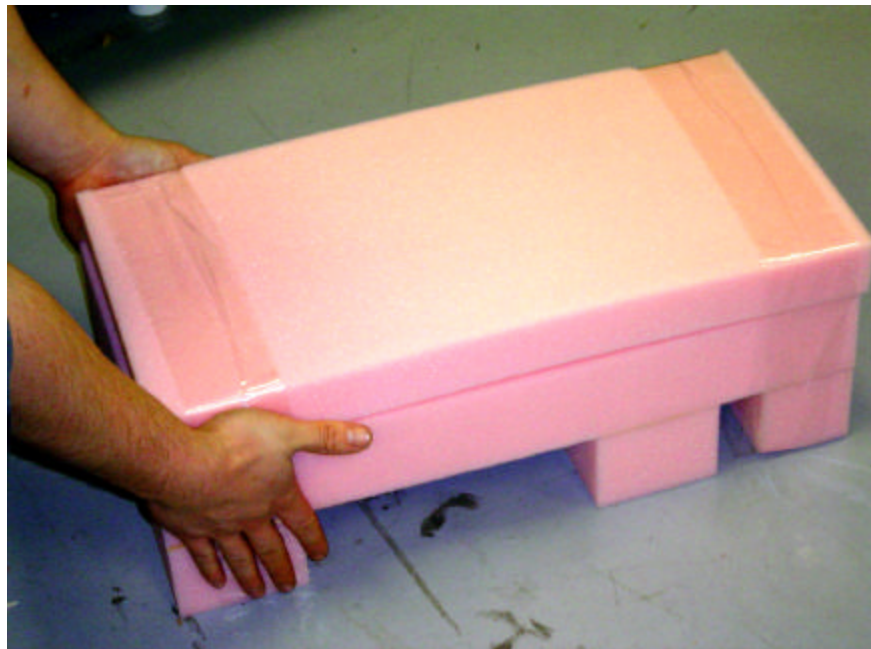
Power supply was placed in bag. The bag was then "wrapped" around the power supply, sealed with tape, and inserted into carton as shown.

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4U Backplane Assy CRU in packaging PA-001086



The static interceptor bag could not be placed directly over the Backplane CRU. The VHDM connector locating pins would pierce the bag violating the seal. A piece of ESD bag was used where the VHDM connectors contact the foam on the backplane box, preventing contamination of small foam pieces in the connectors.



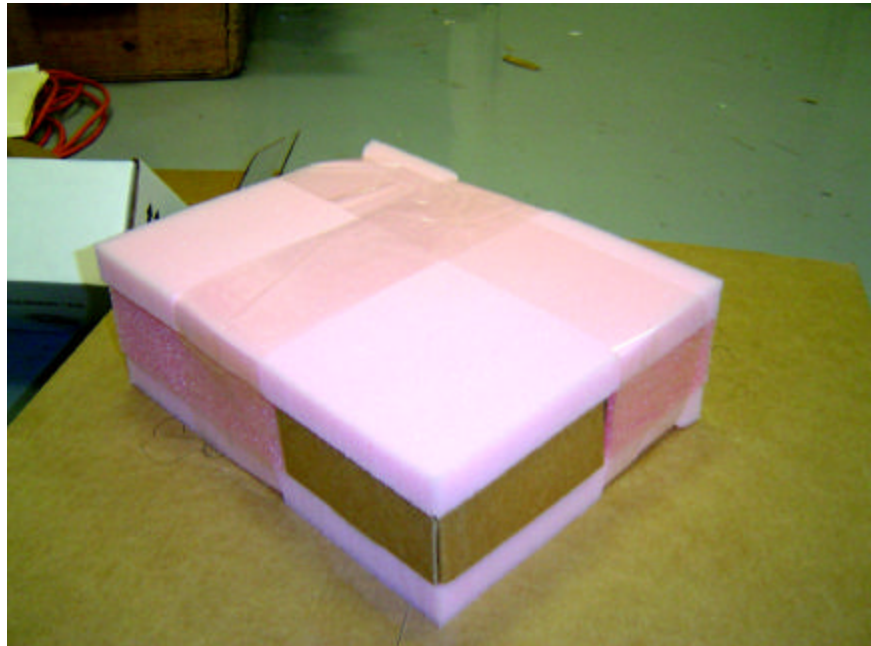
Backplane was placed in foam and taped in place as shown.

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Bag was placed over backplane and foam and inserted into CRU box.

Processor in packaging PA-001084



All components were assembled into the foam. Then components and foam were taped together as shown.



Foam and components were bagged and placed into carton as shown.

4.1.4 Results

The system and individual CRUs were visibly inspected and functionally tested. All passed.