



EN 61000-4-2 (1998) Electrostatic Discharge Test Report

Applicant: Advanced Fiber Solutions
45 Franklin Street
Milton, MA 02186

Equipment Under Test: Product: UOR-200 Series
Model: UOR-200

Test Location: Marlboro Test Labs
257 Simarano Drive
Marlboro, MA 01752-1298

Test Date: October 26, 2005

This report contains the results of an investigation of the product tested. This report may only be used to document the EN 61000-4-2 testing herein and may only be reproduced in full. Any distribution of the information contained in this report requires prior approval from Advanced Fiber Solutions.

Tested & Reviewed By:

A handwritten signature in black ink, appearing to read 'G. Abboud', written over a horizontal line.

G. Abboud
Test Engineer

Reviewed By:

A handwritten signature in black ink, appearing to read 'Charles Nasser', written over a horizontal line.

Charles Nasser



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1.0 OVERVIEW

This report has been compiled to document the Electro-Static Discharge test parameters, effects and results of the Advanced Fiber Solutions UOR-200 in comparison to the requirements for equipment, as specified in the following documents:

89/336/EEC (3 May 1989) Official Journal of the European Communities
Council Directive on Electromagnetic Compatibility

92/31/EEC (28 April 1992) Official Journal of the European Communities
Amending Directive 89/336/EEC on:
Council Directive on Electromagnetic Compatibility

EN61326 (1998) Electrical equipment for measurement, control and
laboratory use EMC requirements

EN61000-4-2 (1998) Electromagnetic compatibility (EMC)
A2 Part 4: Testing and measurement techniques -
Section 2: Electrostatic discharge immunity test

2.0 PRODUCT IDENTIFICATION

Equipment Under Test: Advanced Fiber Solutions UOR-200

Type: The UOR-200 is an optical time domain reflectometer used to test fiber optic cables.

Model	Serial Number
UOR-200	N/A

EUT Power Requirements
USB powered

EUT Internal Board(s)					
Description	Clock Freq.(s)	P/N	S/N	Rev.	Slot #
	33MHz, 66MHz, 100MHz				

Modifications made to Equipment Required for Compliance

No modifications were necessary.

Performance Criteria:

Criteria A: Laptop display shows fiber measurement data.

Criteria B: Laptop stops displaying fiber measurement information. EUT reboots on its own and laptop displays readings again.

Criteria C: EUT hangs and displays an error message on the laptop. The EUT will not reboot and requires a manual reboot.

Criteria D: EUT hangs up. The EUT will not continue to function after a manual reboot. The EUT is broken.



3.0 TEST DESCRIPTION

The EUT setup was placed in the ESD test laboratory in accordance with the IEC standard, with the following climatic conditions:

Temperature: 21 degrees C
Relative Humidity: 42 %

The EUT was connected as shown in Section 8.0 of this report. The customer was not present during testing.

A horizontal coupling plane (HCP) was placed on a non-conductive table, 0.8 meters above the ground plane. The EUT was placed on the table with an insulating support between the EUT and the HCP. All cables were also isolated from the HCP. See Section 8 for photographs of typical set-ups. The HCP cable was verified at 933Kohms immediately prior to testing.

A vertical coupling plane (VCP) measuring 0.5m by 0.5m was fixed 0.1m from the vertical surfaces of the equipment, parallel to them and connected to the ground plane through two series 470 K Ohm resistors. The ESD simulator was charged and allowed to discharge to the VCP. This test was repeated until all vertical surface areas of the EUT were exposed to the VCP. The VCP was verified at 950Kohms immediately prior to the testing.

The ESD events were applied to such points and surfaces of the EUT, which are normally accessible to the operator for normal operation or maintenance as specified by the customer. The EUT was subjected to Severity Level 2, plus/minus 4 KV contact discharge and Level 3; plus/minus 8 KV air discharge. Each Contact and Air discharge point received 50 discharges (25 positive & 25 negative). Contact discharge is the preferred test method. Air discharges are used where contact discharge cannot be applied.

NOTES:

1. See Section 7, for typical ESD wave shape.

Deviations: There were no deviations to the test procedure.

Mode of EUT Operation: EUT was measuring fiber during testing.

4.0 TEST RESULTS

The Advanced Fiber Solutions UOR-200, met the requirements of EN61326 using the test methods described in EN61000-4-2 (1998).

5.0 TEST DATA

Customer: Advanced Fiber Solutions
 Product: UOR-200
 Test Date: October 26, 2005

Contact Discharge (Current Injection)

Air Discharge

Voltage	Level 1		Level 2		Level 3		Level 4			Level1		Level 2		Level 3		Level 4	
	2KV	4KV	6KV	8KV	2KV	4KV	8KV	15 KV		+	-	+	-	+	-	+	-
	+	-	+	-	+	-	+	-		+	-	+	-	+	-	+	-
1	A	A	A	A						A	A	A	A	A	A		
2	A	A	A	A						A	A	A	A	A	A		
3	A	A	A	A						A	A	A	A	A	A		
4	A	A	A	A													
5	A	A	A	A													
6	A	A	A	A													
Indirect Application of discharge/coupling plane																	
Horz.	A	A	A	A													
V.Front	A	A	A	A													
V.Left	A	A	A	A													
V.Right	A	A	A	A													
V.Rear	A	A	A	A													

Results Key:

Performance Criterion A: Normal performance within the specification limits without operator intervention
 Performance Criterion B: Temporary degradation, or loss of function or performance, which is self-recovering.
 Performance Criterion C: Temporary degradation, or loss of function or performance, which requires intervention or system reset to occur.
 Performance Criterion D: Degradation or loss of function, which is not recoverable due to damage to equipment, components, software, or loss of data



6.0 TEST EQUIPMENT

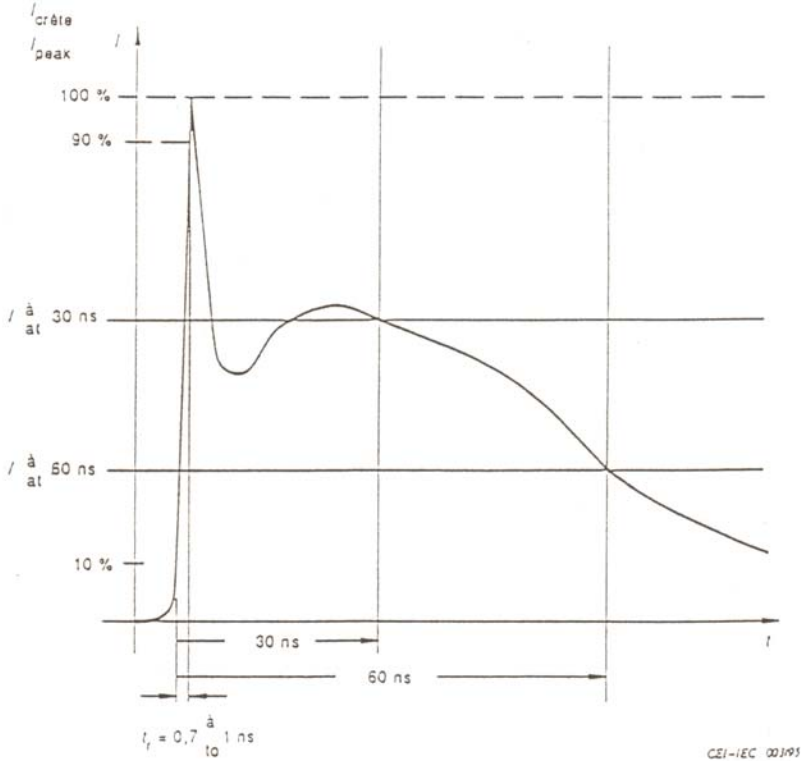
	Equipment	Serial #	Last Cal	Cal Due
*	Coupling Plane ESD Plate	N/A	N/A	N/A
*	Haefely PESD 1600	H706182	10/04/05	10/04/06
*	Dickson TH603 Temp/Humidity Recorder	9197457	02/14/05	02/14/06
	Omega Temp/Humd Recorder	CT485B-704013039W1	02/12/05	02/12/06

* Indicates equipment used for this testing

All equipment used for testing has been calibrated according to methods and procedures defined by the National Institute of Standards and Technology (NIST).



7.0 FIGURES



Les valeurs sont données dans le tableau 2.

Values are given in table 2.

Figure 3 – Forme d’onde typique du courant de sortie du générateur de DES
Typical waveform of the output current of the ESD generator



8.0 PHOTOGRAPHS

